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GLEANNING

FROM THE

MOST CELEBRATED BOOKS

ON

Husbandry, Gardening,

AND

RURAL AFFAIRS.

The improvement of the ground, is the most natural way of obtaining riches.

Lord Bacon.

Many people wonder, why the curious enquirers into nature will give themselves so much trouble about *exotic* plants; but they do not sufficiently consider, that many kinds of *grain*, many *roots*, *legumes*, *fruits*, *fallads*, and *trees*, in common use with us for nourishment, household utensils, cloathing, and ornament, are originally exotics.

Stillingfleet's Tracts.

FROM THE LONDON SECOND EDITION OF 1803.

—●—

Interspersed with REMARKS and OBSERVATIONS by a
Gentleman of Philadelphia.

Philadelphia:

PRINTED AND SOLD BY JAMES HUMPHREYS,

At the N. W. Corner of Walnut and Dock-streets.

.....
1803.

District of Pennsylvania,—to wit.

BE IT REMEMBERED *that on the twenty-seventh day of July, in the twenty-eighth year of the Independence of the United States of America, James Humphreys of the said district, hath deposited in this office, the Title of a Book, the right whereof he claims as Proprietor in the words following, to wit.*

“ Gleanings from the most celebrated Books on Husbandry, Gardening, and Rural Affairs.

“ The improvement of the ground is the most natural way of obtaining riches. Lord Bacon.

“ Many people wonder why the curious enquirers into nature will give themselves so much trouble about exotic plants ; but they do not sufficiently consider, that many kinds of grain, many roots, legumes, fruits, sallads, and trees, in common use with us for nourishment, household utensils, cloathing, and ornament, are originally exotics. Stillingfleet's Tracts.

“ From the London Second Edition of 1803. Interspersed with Remarks and Observations by a Gentleman of Philadelphia.”

In conformity to the act of the Congress of the United States, intituled, “ An act for the encouragement of learning, by securing the copies of maps, charts, and books, to the authors and proprietors of such copies during the times therein mentioned.” And also to an act, intituled, “ An act supplementary to an act, intituled “ An act for the encouragement of learning by securing the copies of maps, charts, and books, to the authors and proprietors of such copies during the times therein mentioned, and extending the benefits thereof to the arts of designing, engraving, and etching historical and other prints.”

D. CALDWELL,
Clerk of the District of Pennsylvania.

5411
1055

GLEANINGS

from BOOKS on

AGRICULTURE AND GARDENING, &c.

The general opinion of this Compendium is displayed by the immediate Sale of the first edition; its merit is stamped by the praise of the Reviews (two of which are selected); and the Author's desire to render it more eminently useful, is conspicuous, by the introduction (in the second edition) of GARDENING. This edition has also undergone general Revision, and under many heads is given considerable increase of Information.

Extract from the MONTHLY REVIEW of Feb. 1802.

"The Compiler has extracted a great Variety of Information, which he has arranged in alphabetical order under distinct heads, from A to Z. We think that the publication will be very useful to Agriculturists. It may be considered as a *concise* FARMER'S DICTIONARY."

Extract from the Review in the GENTLEMANS' MAGAZINE, for June 1801.

"This little Work gives the *Essence* of most of the recent Publications of many favourite Authors on Agricultural and Rural Economy, together with the *Surveys of the several Counties* of England, Wales, and Scotland, drawn up at the Desire of the Board of Agriculture. Plants are described in their Varieties; Quantity of Seed necessary per Acre, according to the various Modes of Cultivation; Method of Cultivating, Weeding, Cropping, and Seeding; and lastly, the several Uses to which the Produce, whether of Seed or Haulm, can be most advantageously applied. Trees, whether of the Fruit or Forest Kinds, are also treated of as to their Varieties, the Nature of the Soil they delight in, their Quality and Affections, as to their own Growth, or to what may be in Contact with them; and the various Uses their Blossoms, Fruit, Leaves, or their Wood, are capable of. The Management of Bees, the Dairy, and many other useful Articles, are likewise introduced; together with a Plate of some useful Implements for Draining, Transplanting; &c. The Manner by which Hay is saved in wet Seasons in the North of England, by a practice called Tippling. The Whole is arranged with great Conciseness and Merit, and will prove a most desirable Companion to such as have neither the Means or Leisure to peruse the bulky Materials from which this cheap Treat is judiciously selected."

A LIST OF THE BOOKS OUT OF WHICH, PRINCIPALLY, WERE
SELECTED MATERIALS FOR THE FOLLOWING WORK.

*General Views of the Agriculture of the different Counties of England,
Wales, and Scotland; drawn up at the Desire of the Board of Agri-
culture*
*Transactions of the Society instituted in London for the Encouragement of
Arts, Manufactures, and Commerce.*
Transactions of the Bath Agriculture Society.
Transactions of the Highland Society.
Transactions of the Dublin Society.
Statistical Survey of the County of Dublin.
General View of the Agriculture, &c. of the County of Wicklow.
Marshall's Rural Economy.
Young's Tours.
Hunter's Georgical Essays.
Curtis's Practical Observations on the British Grasses.
New Farmer's Calendar, by Mr. Lawrence.
Domestic Encyclopædia, by Doctor Willich.
Darwin's Phytologia.
*Withering's Botanical Arrangement of all the Vegetables naturally
growing in Great Britain.*
*And the Work of the following Writers on Gardening, viz. Evelyn,
Bradley, Miller, Abercrombie, Kennedy, Kyle, Preston, &c.*

The different methods of cultivating each Plant or Tree, are ar-
ranged under the several heads of SOIL, SEED, PLANT, or TREE,
with a single letter in *Italic* before each; and for conciseness nearly
on the plan of *Cronstedt's Mineralogy*.

☞ The Remarks, &c. interspersed through the following Work,
and embraced as "thus" are by the American Editor.

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GLEANINGS

ON

AGRICULTURE, &c.

“ AGRICULTURE *we may thank for our Property—our Municipal Rights—the mildness of our Manners—our Sciences—and our Arts.*”

AC.

ACCOUNTS

Kept of country business, are *important*; and when a little *familiarized* by use, become highly *interesting* and *advantageous* to farmers and husbandmen.

ACRE.

A term used for a certain quantity of land, by which the size of a farm is calculated, and let by.

1. *English*—Contains 160 perches, of $16\frac{1}{2}$ feet, or 40 perches long, and 4 broad; or 4840 square yards; or 43,560 square feet.
2. *Scotch*—Contains 5760 square yards of 37 inches each; hence the proportion between the *Scotch* and *English* acre, is very nearly as 5 to 4.
3. *Irish*—Contains 160 square perches.

The proportionable quantity of seed, is as $2\frac{1}{2}$ bushels an *English* acre, to 4 bushels an *Irish* acre.

[1]

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AFTERMATH,

The second growth of grass on a field, of which the herbage has already been mown for hay.

1. Near London when the Latter-meath is to be made into hay, the fields are shut up for the first crop by Lady-day: if to be fed, not till the latter end of April.
2. Irrigation produces a fine latter-meath.
3. The field manured as soon as the hay is carried off, and the cattle not turned in till September or October.
4. Hay made of the Latter-meath is softer than the first crop, and deemed better for Cows than Horses.

Latter-meath is called by different names in various parts of England, as, Aftermath, Roughings, Average, Eddish, Grafton, Rowen.

ALDER.

1. Common Alder. (*Betula Alnus*.)
Var.—Scarlet; Black; Hoary-leaved; Indented or Elm-leaved; Curled-leaved; Broad curled-leaved; White.
2. Black-berry bearing Alder. (*Rhamnus frangula*.)
Culture, &c. of the Common Alder.

1. SOIL.

- a.* Flourishes best in low marshy situations; will not live in a chalky soil.

2. INCREASED.

- a.* By feed.
- b.* By taking up old roots, and dividing them into several parts.

3. TREE.

- a.* The wood soft and brittle.
- b.* The poles fit for use at 16 or 20 years growth.
- c.* Grass grows well beneath its shade.

4. USE.

- a.* The berries dye green.
- b.* The leaves have been used in tanning leather, and also medicinally.

According to Linnæus, the leaves are acceptable as fodder to sheep in winter; are also eaten by goats, horses, and oxen.

c. The bark gives a red colour; with the addition of copperas a black—It is also used by fishermen to stain their nets.

d. Planted for hedges.

e. The wood is used for rafters; pattens; clogs; shoe-heels; turners ware; hurdles; rails for fencing; and chairs, which are very handsome, and of the colour of mahogany.

The knots furnish a beautiful veined wood for cabinets; and the branches make good charcoal.

f. The wood endures a long time under water, and therefore is used for pipes; and to lay under the foundations of buildings situated upon bogs; where it turns black like ebony.

g. In the Highlands of Scotland, the boughs cut in the summer, spread over the fields, and left during the winter to rot, are found to answer as manure; in March the ground is cleared of the undecayed parts, and then ploughed.

In Norway the young twigs are used to feed cattle and horses, when other fodder is scarce.

b. Are planted on the loose ground of the Duke of Bridgewater's canal, by way of security to the banks, and not only answers the original purpose, but has proved a profitable plantation, admitting of being cut down every four or five years.

Shrubs planted on high sloping banks, on the sides of roads, &c. prevents the earth from mouldering down.

Culture, &c. of the black-berry bearing Alder.

1. SOIL.

a. A wet soil and shade.

2. INCREASED.

a. By seed, which should be sown as soon as they are ripe, and then the plants will come up the spring following; but if they are kept out of the ground till spring, the plants will not come up till the second year.

b. By layers and cuttings, but the seedling plants are best—Grows wild in woods and wet hedges.

3. TREE.

a. The wood when young is soft and yellow; but becomes hard and light-red with age.

4. USE.

- a. The berries gathered before they are ripe, dye wool green; and a very beautiful green has been procured from the ripe berries.
- b. The bark dyes yellow; and with iron black.
- c. Charcoal prepared from the wood is preferred by the makers of gunpowder.

ALEXANDERS. (*Smyrniun Olusatrum.*)*Culture, &c.*

1. SEED.

- a. Sown both in autumn and in the spring; the first produces the strongest plants: the seed of the spring sowing, often lay a year in the ground.

2. PLANT.

- a. The plants of the autumn sowing, thinned in the spring to 10 inches or a foot; and the following February earthed up to blanch them: or they may be planted and treated in trenches like celery.

3. USE.

- a. This was formerly eaten as celery is; but on the introduction of celery into our gardens, this being inferior to it, is now seldom cultivated.—Has been used in physic.

ALMOND. (*Amygdalus Communis.*)

- 1. Common *Bitter Almond.*
- 2. *Sweet Almond.*

These two arise from the fruit of the same tree.

- 3. *Jordan Almond.*

The shell is tender, the kernel large and sweet; the leaves broader than the common sort, and their edges crenated: the flowers small, pale, and inclining to white.

Culture, &c.

1. SOIL.

- a. Will succeed in any common soil of our gardens, but require, for the sake of the blossoms, a sheltered sunny situation.

2. INCREASED.

- a. By planting the almonds in the shells in the spring, in drills two inches deep, and in rows a foot asunder.

In three years from this they bear, as the peach. It is best to plant them where wanted to remain.

b. By budding or inoculation in July; into plum-stocks for wet ground; and into peach or almond for dry.

In the middle States of *America*, plant the seeds to grow, the trees in the coldest clay soil for preventing the *blossoms coming too forward*. The tree need scarcely be sheltered but from shelters of other trees or fences, some little way off, for breaking bleak winds.

3. TREE.

Is much of the nature of the peach-tree, and is hardy.

a. Are planted either as whole or half standards, at from 4 to 7 feet high, and 20 or 30 feet distance; or against walls and as espaliers, which produce larger and forwarder fruit.

b. Bears principally on the young shoots.

4. USE.

a. The fruit.

b. The sweet almond has been used as a substitute for cocoa-nuts, in making a kind of chocolate.

c. An oil is drawn from the kernel.

d. A cosmetic is made of the bitter almond.

e. As an ornamental tree.

There is a dwarf kind (*A. Nana*) only about three feet high, which is increased by suckers, and is kept in gardens for the sake of the blossoms; which appear in April.

ANGELICA. (*Angelica Archangelica*.)

Culture, &c.

1. SOIL.

a. A moist rich soil, as the banks of ditches.

2. SEED.

a. Should be sown soon after it is ripe.

3. PLANT.

a. Planted three feet asunder.

b. The flowering stems (which do not appear till the second year) should be cut down in May, which will occasion their putting out heads from the sides of the roots, whereby they may be continued for three or four years; whereas if they are permitted to seed, their roots will perish soon after.

- c. When cultivated for the seed, new plantations should be made annually.

4. USE.

- a. The plant is used in medicine, as is also the seed; and the confectioners make a *sweetmeat* with the tender stalks, cut in May.—In Raffald's English Housekeeper, is directions how to *candy* them.

APPLE. (*Pyrus Malus*.)

1. Wild Apple or *Crab*; of this there are two varieties of fruit, one is *white*, and the other *purple* towards the sun.
2. Apple, this fruit (or at least the best cider kinds) are said to have been brought from Normandy.

Some of the best cider apples, as the Red-streak, Golden Pippin and Redmus, are nearly lost, few grafts taken from them producing fruit equal to the old trees—the following are now reckoned among the best cider fruit. viz. Oxford Pippin, Red Kernel, Black Fox Whelp, Forest Sire, Skerm's Kernel, Marsh Apple, Stone Pippin, Never-fail, Bastard or Winter Pearmain, Winter Merchant, Iberton's Streaking, Bunch Pippin, Pitt Crab, Ladbroke's Red-streak.

Culture, &c. of the Wild Apple or Crab.

I. TREE.

- a. Flourishes better on declivities and in shady places, than in open exposures or boggy lands.
- b. Grass grows well beneath it.

2. USE.

- a. As a *stock* on which to ingraft the better kinds of apples.
- b. For *bedges*.
- c. The bark affords a yellow dye.
- d. The wood is tolerably hard: it turns very clean, and when made into cogs for wheels, obtains a polish and wears a long time.
- e. With a proper addition of sugar, it is supposed that a very grateful liquor may be made with the juice, but little inferior to Old Hock.
- f. *Vinegar* is made in the following manner of the fruit—To one peck of crabs bruised, put nine gallons of

cold spring water in a tub; let them stand about nine days; cover them over with a cloth, stir the crabs once, at least, every day; then strain it through a hair cloth, and put it into a cask, iron bound and painted. To every gallon of the liquor, put one pound of sugar, and stir it in the cask a few times, to dissolve the sugar—Let the cask stand where it will have as much of the sun as possible; and cover it with a tile, to keep insects and rain out.

- g. The juice, called by the country people *Verjuice*, is much used in recent Sprains, and in other cases as an astringent and repellant—Kept three or four years, it becomes an excellent palatable liquor.

Culture, &c. of the Apple.

I. SOIL.

- a. A *loamy clay* soil esteemed the best, the cider being better and keeping longer than from trees growing on other soils.
- b. *Sandy or light soil*—The cider made from this soil is pleasant and good for the first year, and often the second, but is apt to get acid in long keeping.

2. INCREASED FROM PIPS OR KERNELS.

- a. After the apples are ground in a mill, and the juice for cider pressed out, the rind, core and kernels (or *must*, as it is called) should be crumbled very small, and laid thin on a board floor to dry; for if it be laid thick, it will heat and destroy the vegetation of the kernels. To prevent its heating, it should often be turned with a malt-shovel—In February or March lay it on a well dug piece of ground, and shovel-turn it in, that it may be two inches deep; in about six weeks the young plants will appear, and must be kept clean of weeds.

3. INCREASED BY GRAFTING.

- a. Crab-stocks preferred by some to Apple-stocks for grafting; as 1. succeeding in stiff cold, moist ground, where the apple-stock will canker and die. 2. Because its roots are neither killed by frost, nor eaten by field-mice. 3. Does not vegetate so early as the apple, which may preserve the flower from the blasts, and be the means of saving a fine crop of fruit.

- b. Apples and Pears have been grafted on the White-thorn.
- c. Take a cutting from the wild crab, and graft it on a black thorn stock: from the offspring take a cutting, graft it on a white thorn stock: from the tree thus produced, take a cutting, and graft it on a wild crab stock, and this tree will produce apples. By a number of repetitions of this operation, have all the varieties of apples been originally produced.—View of the agriculture of Herefordshire.
- d. Grafts, from strong seedling apple trees, do not bear fruit till they are 12 or 20 years old; while the grafts from old trees will bear copiously in 2 or 3 years.
- e. Very large, and even old trees, may be grafted, so as to bear fine heads of other sorts; and thus they will produce a crop of fruit, quicker than by any other method.

4. INCREASED FROM CUTTINGS OR SLIPS.

- a. Near Bury, in Suffex, is a singular variety of the apple tree, called the *sweet apple*; it is often exceeded in height by filbert bushes; but what is very remarkable, it grows freely from cuttings, or rather slips, plucked from the boughs.
- b. The *Codlin* and *Stive Apple* is propagated by suckers; or rather young wood pulled out of the crown of the tree.

5. TREE.

- a. *Trees raised from pips* or kernels are, after remaining two or three years in the seed beds, to be taken up, the *tap-root* cut off and some of the spreading branches; and planted in rows 1 foot apart, and the trees 8 or 10 inches from each other; here to remain three years, when they must again be taken up, the roots and tops dressed, and planted 18 inches distant in the rows, and 4 feet between the rows; in this nursery they must remain till they are from 10 to 15 years old, according to their size, to be carefully trained up straight, and every spring five or six of the largest knots or sprays cut off. Lastly, they are to be planted in fields, 20 or 22 yards from each other; and fenced from cattle.—No animal will touch them if painted annually with human ordure.

Apples grown on trees not grafted, are called Pippins, or Kernel fruit.

- b.* In Kent they find the *trees are advanced* in their growth, *by keeping the land under tillage.*
- c.* Young apple trees, which are found to bear ordinary fruit, should be reduced to stocks for the more valuable sorts.
- d.* If hide-bound, they are to be relieved by cutting the bark with the point of a knife, from the bottom to the top of the stem.
- e.* Canker—transplanting young trees often stops it, or cutting out the cankered part; it is occasioned by the root striking into a bad soil, which also spots the fruit.—A vapour arises from cankered trees, which affects the sound ones.
- f.* Mistletoe, which is frequently fatal to apple-trees, should be pulled out with hooks in frosty weather, when, being brittle, it readily breaks off from the branches—Sheep are very fond of this plant.
- g.* In new plantations, care should be taken, *not to place the trees too deep*; more mischief arising from that one source, than all the other combined causes.
- b.* Trees overgrown with moss, and infested with insects, should have the moss carefully brushed off, and the infected trees anointed with the following mixture, about the latter end of March—To 100 gallons of human urine, and 1 bushel of lime, add cow-dung sufficient to bring it to the consistence of paint.

6. BLOSSOM.

- a.* To preserve from blights, form heaps of sward or spind, in the nature of demishiring or burn-baiting, or heaps of long dung, wet straw, weeds, or any other like matters, at different intervals all round, *i. e.* on every side, and likewise some in different parts of the orchard. If an east wind blow, set fire to some of the heaps on the east side, and some within the body of the orchard; if a south wind, then on the south side; and so occasionally on different sides, as the wind may happen to vary; but always on that side from whence the wind happens to blow, so that the smoke from the smothering of the heaps, may blow through and fumigate

the orchard for some weeks; beginning the latter end of March.

- b.* Botanists impute the fall of the blossom to rain spoiling the *antheræ*—They also condemn smoking the trees, as it dries up the moisture of the *stigma*.

7. FRUIT.

- a.* Apples for Cider should be gathered when *full ripe*, and will quit the tree by gentle shaking; if gathered before ripe, the cider will be rough and hard, and seldom pleasant or good flavoured. Lay them on a gravel walk (some put them under cover) that the wet may the easier run from them, and not thicker than 10 or 12 inches; though some pile them in heaps—Care should be taken to place fruits of equal ripeness and good qualities by themselves; for, if of different ripeness, the cider will be apt to ferment too much, which will cause it to grow hard, and never be rich, full, and fine-flavoured.

- b.* A mixture of apples is esteemed by some to make the best cider.

- c.* Rotten apples should be *picked out*, and attentive managers break off the stalks.

- d.* In some places the *apples are split*, and two kinds of cider made; that with *the red side, being of a superior quality*, to what the whole apple would make.

- e.* To *store apples*—Gather them when the trees and fruit are quite dry; the proper time of the day is from 11 to 4: Take care not to bruise them; put them in a dry place in heaps for about a fortnight to sweat; wipe them carefully; next lay them upon clean straw, 2 or 3 layers thick; but if there is not plenty of room, there may be several layers one upon another, covering the whole with dry straw a foot thick at least, to exclude the damp air and frost.—Some only lay a coarse linen cloth between the layers.

8. CIDER.

- a.* After it has been in hogsheds a few days, it will *work* and throw up a thick substance at the bung-hole somewhat like barm, but of a darker colour; when this appears it generally is dropt fine, and should be *immediately racked* into a clean cask; so long as it remains

fine and free from fermenting, it may remain in the cask, but *if it ferments much, it should be racked*, and the ground or lees taken from it; it often requires four or five rackings. After the whole is done, a bung may be placed over the bung-hole, but should not be close stopped until February or March, when it will be fit for sale or use.

The *lees* may be dropt through a bag or bags, or coarse cloth, made in form of a jelly bag, with a hoop sown round the top to hold about a pail-full; by doing this, very little cider will be wasted, and the droppings added to the cider, will be a means to keep it from fermenting, and will also help the colour.

b. To *refine* cider—For one hoghead of 100 gallons, beat about one ounce and a half of *isinglass*, and pull it to pieces; add to it about two quarts of liquor, and whisk it together; next day add more liquor, and whisk it together; repeat this until it be dissolved, and beaten fine. Rack your foul liquor, throw in the dissolved glass, and stir it together with a stick. As soon as it drops fine, rack it off in a clean cask.

c. If cider be bottled before it be 16 or 18 months old, it endangers the breaking of the bottles.

d. Cider (particularly such as is of an acid tendency) placed *in the sun*, becomes very strong vinegar in a short time; and 1 lb. of *honey* to a gallon of cider will, after standing some months, become such powerful vinegar, that it must be mixed with water for common use.

e. *Lead* used about the mill or press is said to affect the cider so much, as to bring on those that drink it, *Palsy*, *Colick*, &c.

f. The cheese or *pumice* is by some pressed by a lever so close and dry, as to bear being cut into narrow strips, and burnt. "It is better in a manure."

g. A *spirit* is said to be drawn from the *residuum of the press*, macerated in water, and distilled in the usual manner; and added to the cider to give it a body.

9. Use.

a. The Fruit.

b. The bark tans leather; and dyes yellow.

APRICOT. (*Prunus Armeniaca*.)

1. With small but early fruit, ripening in July.—
 1. Early white Musculine.
 2. Early red Musculine.
2. With fruit larger and of a superior flavour, but not ripening till the beginning or middle of August—
 1. Algiers.
 2. Orange.
 3. Roman.
 4. Turkey.
 5. Temple.
3. With large and well flavoured fruit, but not ripening till the middle or end of August; and succeeds in espaliers and as standards.
 1. Breda.
 2. Bruffels.

Culture, &c.

1. SOIL.

- a. Succeed well in any common good soil of a garden.
- b. A light loam.

Much dung makes them gum and canker.

2. INCREASED.

- a. By budding in July or August, on any sort of plum stocks.

Near Aleppo, is grown a kind, which has a sweet kernel, and is an exceeding good fruit; it is ingrafted upon the almond, and its delicacy is reckoned to proceed from that particular circumstance.

3. TREE.

- a. To be transplanted in open weather from the end of October till spring, and will bear it at several years growth: For wall or espaliers should be planted from 15 to 25 feet distance; the last the best: The Turkey requires 30 feet.
- b. Produces fruit principally upon the young wood of a year old, immediately from the eyes of the shoots, and often upon small spurs on the second or third years wood.

It is recommended to prevent the forming of spurs, as the blossoms on them are far off the wall, and more liable to suffer from the frost, than those on the branches, besides producing smaller fruit.

c. *Pruning.*

(1) Summer—consists in regulating the shoots of the year only, retrenching the bad, and training in the useful, and should be begun in May. (2) Winter—may be performed from the end of October till the be-

ginning of March; cutting the smaller shoots to 6, 8, or 10 inches in length, the middle growths to a foot or 15 inches, and the strongest shoots to half a yard or 2 feet long; preserving all the eligible small fruit-spurs, rising on the two or three year's wood: cutting close all considerable projecting old spurs, all dead wood, and old stumps.

(3) *Standers*, after being *headed down the first year*, require no other care, than in winter reducing any long, rambling, very irregular, or crowded branches; and removing dead wood.

d. When there is a great *redundancy of fruit*, thin them, when about the size of small cherries, or gooseberries, leaving not more than two or three on the smaller shoots, three or four on the larger, and so in proportion.

4. USE

- a. The fruit, both ripe and unripe. "Tarts are made of the unripe."
- b. The Chinese extract an excellent oil from the kernel, and use it in lieu of olive oil.

ARNOTTA. (*i. e.* the red pulp that covers the seeds of *Bixa Orellana*.)

USED FOR COLOURING CHEESE.

1. If a considerable part of the cream of the night's milk be taken for butter, more colouring will be requisite; the leaner the cheese is, the more colouring it requires.
2. The weight of a guinea and a half of real Spanish arnotta, is deemed in Cheshire sufficient for a cheese 60 lbs. weight. In Gloucestershire 1 ounce is deemed sufficient for 200 lbs. of cheese. An adulterated kind is exposed for sale in almost every shop.
3. The manner of using arnotta, is to tie up, in a linen rag, the quantity deemed sufficient, and put it into a pint of warm water over night; the infusion is put into the tub of milk in the morning, (with the steep infusion) dipping the rag into the milk, and rubbing in against the palm of the hand as long as any colour comes out.

Gloucester cheese is coloured on the outside with *Spanish brown*, and *Indian red*; sometimes mixed;

sometimes used separately : The method varies ; some “ dab ” on the colouring, wet, with a cloth ; others, while the surface is moist, throw it on, dry, in “ pinches,” irregularly ; rubbing it with the hand—The latter is allowed to be the most mistressly manner. The winter-made cheese in Wiltshire is also painted, it being difficult to get rid of the white scurfy coat, which it generally throws out any other way.

AROMATIC PLANTS,

Are *Rosemary, Sage, Thyme, Savoury, Basil, Lavender, Hyssop, Baum, &c.*

1. Should be cultivated on a *dry* soil.
2. Their virtues improved by drying.
3. Are in highest perfection when just coming into flower, and consequently should be then cut, both for drying and distilling ; they should be cut also in dry weather ; and those intended for keeping, spread or hung up in a dry airy place, out of the reach of the sun, and kept for use in paper bags.

It is a singular circumstance, that the smell is increased, in those varieties of Basil, Mint, &c. which have curled leaves.


ARROW-HEAD. (*Sagittaria Sagittifolia.*)

This is a native plant, growing in wet “ branches,” ditches, and on banks of rivers : there is always a *bulb* at the lower part of the root, growing in the solid earth, beneath the mud ; this bulb constitutes a *considerable part of the food of the Chinese*, and the inhabitants of *some parts of America*, and upon that account *they cultivate it* : and it has been recommended to attempt it here, as it grows in places, where no other useful plant will.—As the roots of the foreign greatly exceeds ours in size, it would doubtless be better to get some from abroad, than to attempt to improve our own.

ARROW-ROOT. (*Maranta Galanga.*)

The roots of this plant received about Midsummer from the West Indies, continued to grow in the open ground till the frost set in, with which the leaves were

not so soon injured, as those of the potatoe: The roots, after the shoots died down, continued till the spring without decaying, when they were destroyed by too much watering—It remains therefore doubtful, whether, with better management, it would bear this climate, or not.

 Of the roots is made the fine white flour, sold by grocers, and which is esteemed remarkably nutritious.

ARTICHOKE. (*Cynara Scolymus*.)

1. *Globe A.* This hath large round heads, with brown scales, which turn inwards.
2. *French A.* The stalks of this generally grow taller than the former; the heads are smaller, and shaped more conical; the scales are narrower, of a greenish colour, and frequently turned outward; it hath less flesh, which hath a disagreeable perfumed taste.

The scales of the cup of the common Milk Thistle (*Carduus Marianus*) are said to be as good as those of the Artichoke.

Culture, &c.

1. SOIL.

- a. A rich moist soil—In a wet soil the roots seldom outlive the winter.

2. INCREASED.

- a. By young suckers, planted in March or July, in rows $4\frac{1}{2}$ feet asunder, by 3 in the rows, and 4 inches deep—A thin crop of spinnage may be sown before they are planted.

3. PLANT.

- a. To be kept clear of weeds, and hoed during summer.
- b. If any of the spring planting should not fruit in autumn, at the season of earthing up the roots, tie up the leaves with willow twigs, and lay the earth close up to them, so that the top of the plant may be above ground; and when the frost comes on, cover the top with a little straw, or peas-haulm, to guard off the frost: these plants will produce fruit in winter, or early in the spring.
- c. After gathering the heads, break down the stalks, to encourage shoots from the bottom more effectually before winter.

- d. The heads cut in November with the full stalk, and stuck in sand under cover, will continue good a long time.
- e. The leaves of old plants bleached like cardoons, and preserved under a bed of sand, lose their bitter taste.
- f. White beet sown among the plants to draw mice from them.

4. USE.

- a. In England the full heads only are eaten, always boiled; in Italy they eat the young heads raw, with oil, salt and pepper. The French dry the heads of the second crop on a string, like beads, with paper between; and use them with mushrooms in meat pies.
- b. The stalks are eaten in France and Germany boiled, and seasoned with butter and vinegar.
- c. The flowers have the *property of rennet*, in curdling of milk.
- d. The roots in medicine.

ASH.

- 1. Common Ash. (*Fraxinus Excelsior.*)
- 2. Flowering Ash or Ornus. (*F. Ornus.*)
- 3. Mountain Ash. (*Sorbus Aucuparia.*)

The varieties of the Common Ash are, 1. with white or yellow striped leaves. 2. Yellow coloured Ash tree.

Culture, &c.

1. SOIL.

- a. Will grow almost on any soil.
- b. In damp meadows or moorish soils, becomes light, spongy, brittle, and of small value in comparison of that on dry and healthy spots.

2. INCREASED.

- a. From keys or seeds, which must be buried one year in beds or pots of sand, before they are sown.—Four bushels are sufficient for an acre.

3. TREE.

- a. If removed when 10 or 12 feet high, the grain acquires a degree of tenacity very *prejudicial to the timber*; and will not cleave into hoops.
- b. In open groves they run to great lengths, are free cleft, and make valuable timber.

- c. Endures well the sea-winds, and may therefore be planted upon the shores, where few other trees will grow.
- d. If seedling ash be planted at 4 feet distance, and a 2 years old cut within 4 inches of the ground, the stools will 10 years after afford poles, generally three from each stool. The first five years they require weeding, after that no further trouble.—These poles serve for hurdles, hop poles, hoops, laths, fencing, and what is termed post and billet for colleries. Has been known to shoot 10 feet the first season after cutting.
- e. Is usually fit for sheep cribs at 9 or 12 years old, for hop poles from 11 to 14; but for carpenters and others use must stand from 16 to 20 years.
- f. Should not be planted in dairy fields, as the leaves communicate an incurable bad taste to the butter, during the time of their dropping in autumn.
- g. Linnæus says, that, ~~if~~ *while the ash is leafing there is scarcely any more frost*; therefore greenhouse plants ought to be brought into the open air—i. e. about the 22d of April.

4. USE.

- a. For coachmakers, wheelwrights, coopers, &c. Hop-poles, spade-handles, rake-stems, pick-stems, and other implements of husbandry are made of it.—The shavings give to wool, prepared with bismuth, the true and permanent *vigogne* colour.
- b. In Lancashire they lop the tops of this tree to feed the cattle in autumn, when the grass is upon the decline; the cattle peeling off the bark as food. This tree bears lopping. Horses and sheep are fond of the leaves.
- c. The ashes of the wood afford very good pot-ash.
- d. The bark is used for tanning calf skins; and dying green, black, and blue.
- e. In warm climates a kind of sweet gum, called *Man-na*, distils from this tree.

Culture, &c. of the Flowering Ash or Ornus.

1. TREE.

- a. Has been a long time planted in this country, but does not grow higher than 15 or 16 feet.

2. USE.

a. In Calabria they procure Manna from the Ornus, or small leaved flowering Ash, by making a horizontal gash, inclining upwards, in the bole of the tree. As the liquor never oozes out the first day, another cut is given on the second, and then the stalk of a maple leaf is fixed in the upper wound, and the end of the leaf in the lower one, so as to form a cup to receive the gum as it exsils from each slash. All the strong stems that grow above the thickness of a man's leg are cut down.

Culture, &c. of the Mountain Ash.

1. TREE.

- a.* Is a native tree, and grows well in woods or open fields, and attains to a large size. It is cultivated in nursery gardens, and sold as a flowering shrub.
- b.* The wood is hard and durable.
- c.* Plants grow well in its shade.

2. USE.

- a.* The *wood* is fit for many æconomical purposes, such as mill-work, screws for presses, spokes for wheels, chairs, &c.
- b.* The *roots* are formed into handles for knives, and wooden spoons.
- c.* The Highlanders, who use bog or turf holes in place of tan pits, aid the tanning principle of the bog water, with the bark of this tree.
- d.* Bread has been made with the dried powdered *berries*—In some parts of the Highlands a good spirit is distilled from them—Under proper management, make an acid liquor somewhat like perry—The poorer sort of people in Wales make a drink, called *diødgrïafel*, by infusing the berries in water.

” Poison Ash.

” A shrub or small tree, growing in muddy branches of water, and tempting travellers to break off their tufts of white flowers, which occasions them to swell and break out in sores.”

ASPARAGUS. (*Asparagus Officinalis*.)

Grows wild in fields near the sea, and in the fens of Lincolnshire.

Culture, &c. of Natural or late Grass.

1. SOIL.

- a. Must not be too strong, but such as is moderately light and pliable; and a good quantity of dung trenched 12 or 15 inches below the surface.

2. SEED.

- a. Sown broad cast in March or early in April, on beds 4 feet wide, trod in, and covered with some of the earth of the alleys.

A thin crop of onions, to be drawn young, may be sown with them.

- b. Two or three seeds sown instead of planting a root in forming the beds, when the plants are up, thinned to one in a place.

This is a good method, but the plants are not fit to cut so soon by a year, as from roots.

3. PLANTS.

- a. The first year to be kept well weeded, and occasionally watered.

- b. When one year old, or at most two, to be planted in March, in beds $4\frac{1}{2}$ feet wide, with alleys 2 feet wide; the plants to be 9 inches from the edge, and 10 or 12 inches apart; to be planted against a ridge, formed by drawing trenches 6 inches deep, and the roots earthed with the hand.

- c. Should not be cut till the third year, after which, the beds will continue to bear 10 or 12 years.

The shoots to be cut with a proper knife, when from 2 to 4 inches above ground, and at about 6 inches under the earth; slipping the knife close to the stem, to avoid wounding the young buds.

- d. The beds to be dug to a moderate depth the middle or latter end of March, with a flat three-pronged fork, with blunt ends; and raked smooth.

- e. In June weed the beds, and soon after the 20th or 24th, terminate the general cutting for the year.

f. In October the stalks to be cut down close, the beds weeded, and a spade deep of earth out of the alleys spread even over them.

Old beds should have a dressing of very rotten dung once in two or three years, before the earth of the alleys is put on.

g. Gardeners generally after the October dressing, plant colewerts or cabbages in the alleys; and a row of early beans, on the north or east side of the alleys; according to the direction in which the beds run, so as best to protect them from cold winds.

Culture, &c. of Forced or early Grass.

1. PLANT.

a. Roots three or four years old are to be planted on hot beds from November till February; the dung being covered with earth 6 or 7 inches deep, and the roots placed close together, (previously raising a ridge of earth to place the roots against) and earthed with the hand; a bank of moist earth is then to be raised round the outside roots, as high as the tops; and then cover the crown of all with light rich earth. When the buds appear, add another covering of mould 3 or 4 inches deep, having first bound the bed with straw bands fastened by wooden pegs, to keep up this earth, and to receive the frame; if prior to this, snow or much rain falls, the beds must be covered with mats or straw: when it is judged all danger of burning is over, put on the frame and lights, raising them as there is occasion about an inch high; to give the steam vent, and to admit air; especially when the buds first begin to appear.

A bed will produce in four or five weeks, and continue about three weeks, giving under a frame of three lights, 300 or 400 a week.

b. The shoots must not be cut, but broke off with the fingers close to the roots.

2. USE.

a. The young shoots are very universally esteemed for their flavour, and nutritious qualities.

ASSAFÆTIDA. (*Ferula Assa fetida.*)

This *plant* appears to be hardy enough for cultivation in England—The *gum-resin* procured from it is esteem-

ed a valuable drug: the Persians also use it as a spice with their food.

AZAROLE. (*Cratægus Azarolus*.)

1. Common Azarole.
2. Oriental parsley-leaved Azarole. (*C. A. Aronia*.)
3. Without spines.

Culture, &c.

1. INCREASED.

- a. By sowing the berries or seed in autumn or winter, which seldom all grow, till the second spring.
- b. By budding or grafting.
- c. By layers.

2. TREE.

- a. Generally trained as small standards of 3, 4, or 5 feet stems, with bushy heads.
- b. Planted in gardens, orchards, pleasure grounds, &c. 20 or 30 feet asunder.

3. USE.

- a. The fruit—This is a large red or yellow berry, which ripens in autumn, and has an agreeable acid flavour.

BARLEY.

1. *Spring Barley* (*Hordeum vulgare*).

- a. Rath-ripe Barley. This is a variety of the former, occasioned by being cultivated upon warm gravelly lands: the seeds when sown in cold or strong land, will, the first year, ripen near a fortnight earlier than the seeds taken from strong land, but loses wholly this advantage when the same seed is cultivated two or three years—Often ripen in nine weeks after sowing.

2. *Long-eared Barley* (*Hordeum Zeocriton*). This is much esteemed for malting; but from the heaviness of the ears it is apt to lodge.

3. *Sprat*, or *Battledore Barley* (*Hordeum Distichon*). The straw is short and coarse, so not very good fodder for cattle. It has been sown with success in wet and dry grounds.

4. *Winter, Square, Big, or Bear Barley* (*Hordeum Hexastichon*). This is a hardy species, but not so good

for malting as the former—has four or six rows of grain—is sown in autumn.

Winter barley is chiefly sown in the north of England, in Scotland, and in Ireland; being found to be more prolific in cold barren sandy lands, than the common barley.

5. *Siberian Barley.*

6. *Zealand Barley.*

7. In the Western Islands of Scotland is cultivated a kind of barley, which, on land manured either with sea weed or marle, produces from 20 to 25 fold; a single grain will throw up from 7 to 14 stalks, many of which carry 5 ears.

Culture, &c. of Spring Barley.

1. SOIL.

a. Should be rather light than stiff, but of sufficient tenacity and strength to retain the moisture—On clays the grains are coarse and brown.

2. SEED.

a. Should be of a pale lively colour and brightish cast, without any deep redness or black tinge at the tail; if the rind be a little shrivelled it is the better.

b. Requires being changed more than any other grain.

c. In a dry season, if soaked in clean or stagnate water for 24 hours, it will come up a fortnight earlier than dry seed: the light corn that floats should be skimmed off. Some little risk attends soaked seed, it being apt to burst if much rain fall before it is come up.

Barley that has been wetted for malting, and begins to sprout, will soon come up.

d. In a trial made between sowing it drilled and broadcast, the extra produce of the drilled crop was about 20 bushels per acre; besides near two bushels of seed saved. A single grain set or drilled will sometimes produce 80 stalks.

3. PLANT.

a. *Rolling* it makes it tiller into a greater number of stalks.

b. If the blade grows *rank*, mowing is better than feed-

ing with sheep, as the sheep are apt to bite so low as to injure its future growth.

- c. In a periodical publication we have an account of a field near Longton, in Cumberland, producing (in 1801) two very productive crops of barley. The first was reaped on the 25th of July, and the second (which grew from the old roots) on the 15th of September.
- d. Barley cut before it is full ripe, is said to be thereby thinner skinned, paler coloured, and to give the same quantity of flour.

4. USE.

- a. The Rath-ripe having the thinnest chaff, is the best for Malt.
- b. For making bread, principally the Winter Barley; the meal is also used for fattening swine.

The meal for bread is either used alone, or mixed with wheat flour in the proportion of one-half, one-fourth, or one-third; and with oatmeal in an equal proportion.

- c. Pearl Barley.

A variety of the long eared barley is cultivated in Northumberland, whose awns mostly drop, or are easily shaken off when ripe; from the grain being shorter, plumper, and rounder bodied, than the common sort; it is preferred by the millers for making into pearl barley—It ripens later than the common sort, by near a fortnight.

- d. In Spain, and other hot countries, they give barley instead of oats, to horses, mules, and asses; and in Spain also in small quantities to working oxen.
- e. The straw as fodder.

Gives a bitterness to butter, which is done away, if, instead of putting the cream immediately as it is skimmed off the milk, into the jar or other retaining vessel, it is first poured upon hot water, and having stood till cool, is skimmed off the water. This also removes the rancidness of turnep butter.

Culture of Siberian Barley.

1. SOIL.

- a. Requires a good rich soil.

2. SEED.

- a. Dibbled more productive than broad-cast, in the proportion of about one-tenth.
- b. Increased from a seed sown nearly 40 from 1.
- c. The grains not so numerous but heavier than the common Barley.
- d. Ripens a fortnight earlier than the common Barley.
- e. The husk is left in the ear when threshed.

3. USE.

- a. Makes sweet and pleasant bread, if mixed in the proportion of two-thirds barley, and one-third wheat.

BAROMETER.

The *words* generally engraved on the plates of the barometer, rather serve to mislead than to inform, for the changes of the weather depend rather on the rising and falling of the mercury, than on its standing at any particular height. When the mercury is as high as Fair, or at 30 degrees, and the surface of it is *concave*, *beginning to descend*, it very often rains; and on the contrary, when even the mercury is at 29 degrees, opposite to rain, when the surface of it is *convex*, *beginning to rise*, fair weather may be expected. These circumstances not being known, or not duly attended to, is the principal cause that farmers and others have not a proper confidence in this instrument.

It must also be observed, that *ceteris paribus*, the mercury is higher in cold than in warm weather, and commonly early in the morning, or late in the evening, than at noon, which seems occasioned by the obvious causes of the atmosphere being condensed by the cold of the night, and rarefied by the heat of the day.

The following observations of Mr. *Patrick* seems confirmed by experience.

- 1. The *rising* of the mercury presages, in general, *fair weather*; and its *falling* *foul weather*, as rain, snow, high winds, and storms.
- 2. In *hot weather* the *fall* of the mercury indicates *thunder*.
- 3. In *winter* the *rising* presages *frost*; and in *frosty weather*, if the mercury falls three or four divisions,

there will certainly follow a *thaw*; but in a *continued frost*, if the *mercury rises*, it will certainly *snow*.

4. When *foul weather* happens soon after the *falling of the mercury*, expect but little of it, and, on the *contrary*, expect but little *fair weather* when it proves fair shortly after the *mercury* has risen.
5. In *foul weather*, when the *mercury rises much and high*, and so continues for *two or three days* before the *foul weather* is quite over, then expect a continuance of *fair weather* to follow.
6. In *fair weather*, when the *mercury falls much and low*, and thus continues for *two or three days* before the *rain comes*, then expect a great deal of *wet*, and probably *high winds*.
7. The *unsettled motion of the mercury* denotes *uncertain and changeable weather*.

From *Capper* on the Winds and Monsoons.

BASIL: (*Ocimum Basilicum*.)

Culture, &c.

1. INCREASED.

- a. By seed sown in *March* upon a moderate *hot-bed*.
- b. By cuttings planted in *May* upon a *hot-bed*.

2. PLANTS.

- a. The plants from seed to be soon transplanted upon a second moderate *hot-bed*, and gradually inured to the air: and transplanted in *May*, on warm borders, with a ball of earth about their roots.

3. USE.

- a. In *medicine* and in the *kitchen*.

There are several varieties of this plant; one of which smells like *fennel*, another like a *citron*.

BAULKS.

Narrow *strips of grass between ridges of corn*: A pernicious custom much abolished, but still to be seen in many open fields, in *Oxfordshire*, &c. The word is also applied to *grass ground*, near *hedges* in *ploughed fields*, which serves to turn the *plough horses* on.

BAUM. (*Melissa Officinalis.*)

Culture, &c.

1. PLANT.

a. Is propagated by parting the *roots* in October, and planting them two feet asunder.

b. The plants must be kept clean from weeds; the decayed stalks cut off in September, and the ground stirred between them.

" By seeds, most readily."

2. USE.

a. As a *medicinal* and *culinary* herb.

" Distilled, its water is delicately fine, is superior to the fresh herb, after even a year or two keeping in bottles. Is an excellent family article to have continually for the sick: Proved by recent experience."

WHITE BEAM-TREE. (*Cratægus Aria.*)

Culture, &c.

1. SOIL.

a. Grows naturally on chalk hills.

2. INCREASED.

a. By seed sown when ripe.

b. By layers.

c. By grafting on the pear, which may also be grafted on it—Will sometimes also take upon the medlar.

3. TREE.

a. Will grow to 30 or 40 feet high, with a large trunk.

b. The wood is white, hard, tough, and smooth.

c. Bears lopping, and permits grafts to grow beneath it.

4. USE.

a. The wood, for axle-trees, wheels, cogs for mills, carpenters and other tools; and is excellent for flutes—From its solidity makes the best of charcoal.

b. The fruit is eatable when mellowed by the autumnal frosts.—An ardent spirit may be distilled from it.

Seldom bears a good crop of fruit two years together.

BEANS. (*Vicia Faba.*)

FIELD BEANS.

1. *Small Horse Bean.* French Tick.

2. *Tick.*

3. *Massagan Bean*, not so productive as the tick, but sells for more, and ripens three weeks sooner.

4. *Long-pod Bean*.

5. *Dutch Bean*. Grows 5 feet high, has from 20 to 70 pods; the number of seeds from one single bean 114, which on allowing of an average of three beans and a half to a pod, is 399. "A white bean."

This bean should be sown *thin*, and as *early* as possible, that in wet summers it may ripen in due time for *wheat to follow*.

Great variety is produced by planting different sorts near each other.

Culture, &c.

1. SOIL.

a. Thrives best in strong, moist, clayey soils; will not suit light, sandy lands, or late climates.

b. The roots of some being above a foot long require that depth of soil.

2. SEED.

a. *Bread cast* two bushels and a half; four bushels, five bushels; ploughed or harrowed in.

b. *Set* from two bushels and a half to three bushels.

c. *Drilled* 4 inches apart, in rows 2 feet 6 inches distant.

d. In double rows 1 foot asunder, with alleys 3 feet wide.

e. *Drilled* two furrows upon 3 foot ridges.

f. *Pease, Vetches, or Turneps* sown between the rows, the last not then attacked by the fly.

A mixture (called *Mashlome*) of oats, barley, rye, pease, and beans, was, till of late, cultivated in Dumbartonshire for bread, by almost every farmer—Some small fields are yet cropped with this mixture.

g. Sown the end of February, in March, or beginning of April.

May be drilled or planted so early as the month of December, from whence may be derived the advantage of an *early harvest*; in which case the straw will be far more valuable, than that from a later planting or drilling.

3. PLANT.

- a. Weeded by turning sheep into them; or with the horse and hand hoe. "Would not sheep pasture upon them?"
- b. When in rows to be earthed up.
- c. *Tops* of the beans *taken off just as the blossoms are set*, not only improves the *quality*, but increases the *quantity*, and causes them to *ripen sooner*. It also destroys a black insect on their tops.
- d. Beans are generally *cut off* above ground *with a scythe or reaping hook*; but if the haulm is short (as that of the long pod and massagan is) they are, in some places, pulled up by the roots.
- e. Should remain in the stack till Christmas to harden.

4. USE.

- a. A more hearty and profitable food for *horses* than oats—Are frequently crushed in a mill for them.
- b. Bean meal answers for *fattening oxen*.
- c. The *haulm* used as *fodder* for working horses and cattle.
- d. Soap boilers use the ashes of the burnt haulm. as do bleachers.

Lewis, in his *Materia Medica*, remarks, that the ashes of Bean-stalks, Broom, and Worm-wood, *yield a pure alkaline salt*; whereas in divers *other vegetables*, there is a large mixture of *other saline matter*.

GARDEN BEANS.

- 1. *Early Mazagon*—A great bearer, and a good sort. The seed is procured from Portugal: after being planted two years in England, the seed grows larger, and does not ripen so soon; which is called a degeneracy.
- 2. *Early Spanish* or Lisbon—A small and sweet bean.
- 3. *Sandwich*—A good bearer, and hardier than the Windfor.
- 4. *Windfor*—One of our best tasted beans when young; not a hardy kind.
- 5. *White blossom*—A good sort and bears well. The seed when old, black, and apt to degenerate if not saved with care.
- 6. *Green Genoa*. Seed when old, green. A late bean.
- 7. *Bog, Fan, or Cluster*—Grows only from 6 to 12 inches high.

8. *Early long pod.*
9. *Large long pod.*
10. *True sword pod.*
11. *Mumford.*
12. *Broad Spanish.*
13. *Toker.* A good bearer.
14. *Red blossom.*
15. *Willow-leaved.*
16. *Nonpareil.*

Culture, &c.

1. SEED.

a. For an early crop—Sow on a border under a S. wall, or fence, from the last week in October to the end of November: if the border is 5 or 6 feet wide, sow crossways in rows $2\frac{1}{2}$ feet asunder; if the border is narrow, one row near the wall, and the other $2\frac{1}{2}$ feet from it.

In the first case, a row should be planted near the wall, which often survives the winter; while those at a greater distance are cut off.

b. Sown from December till June in open ground.

c. Beans may be forwarded by sowing thick on a warm border, and planting out.

d. The seed for late crops, should be planted in rows 3 feet asunder, and according to the size from 4 to 6 inches apart, and $2\frac{1}{2}$ inches deep.

e. In double rows 4 or 6 inches apart, and alleys 1 or 3 feet.

2. PLANT.

a. To be earthed up; especially the early ones, to protect them from frost.

b. If planted in rows 1 foot asunder, and when 5 or 6 inches high, every other row is cut off 2 or 3 inches from the ground, they will produce two crops; the uncut in July, and the cut in August or September.

If the stalks are cut off within 6 inches of the ground, when the beans are fit for use; they will shoot up several stalks, and produce a second crop.

3. USE.

a. The seed whilst green for the table.

b. Seedsmen brake all kinds of unfold garden beans for horses; or grind them into meal.

BEECH. (*Fagus Sylvatica*.)

1. Common Beech, bark smooth, white.
2. A variety has lately been observed with the bark of the trunk, and larger branches formed like that of the oak; and the tree has likewise the crooked and proportionally short branches of the oak: so that a spectator at some distance, or in the winter season, would undoubtedly take it for such.
3. Striped leaved B.
4. Scarlet B. (*F. β . Sylv. sanguinea*.)

Culture, &c.

1. SOIL.

- a.* Delights in a chalky soil, and lofty situation.
- b.* Best raised on a poor gravelly bottom.

2. INCREASED.

- a.* By seed, (called Beech Mast) to be sown as soon as ripe, two or three bushels to an acre.

In a favourable season, for ripening of the seed, one bushel and a half has produced, 150,000 young trees.

3. TREE.

- a.* Is a free grower; and thereby injures oak if planted with it—Nothing but holly will grow under its drip.
- b.* A beech, at the age of 60, was found to contain 100 feet of timber; and calculated to contain 212 in 24 years after; that is, more in the last 24 years, than in the 60 preceding.
- c.* The wood is brittle, but close grained, and of a firm texture.

4. USE.

- a.* The *leaves* gathered in autumn before they are much injured by the frost, make infinitely better *mattresses* than straw or chaff, and endure for seven or eight years.
- b.* It is unparalleled in water works, for when constantly kept wet, it appears as perfectly sound at 40 years end, as when immersed.
- c.* The wood is formed into tool handles, planes, chairs, bedsteads, spokes, bowls, large screws, &c.

The fellies of the London carts are made of it, because it tears more difficultly than even ash.

d. It is excellent fuel, and when burnt, it affords a large quantity of pot-ash.

e. The mast or seeds yield a good oil for lamps: swine are fond of them, but their fat is soft, and boils away, unless hardened before they are killed, by some other food. They have been toasted as a succedaneum for coffee.

The hulls of the seed are collected by the poor for winter firing.

f. The tree bears lopping, and may be trained to form very lofty hedges.

" BEER.

" Small Beer, the best family drink: Malt and hops are productions of the Farm. *Cyder* being precarious, *Rum*, an intemperate liquor, is unhappily resorted to for want of cyder. The ingredients of *Beer*, (better than either) are always in the power of the Husbandman."

BEES.

I. HIVE.

a. In Yorkshire it is the custom to carry the hives from the marginal heights, into the Moreland in autumn, to be filled up with honey; a practice which, singular as it may appear, has been followed with success.

b. In the transactions of the London Society for the encouragement of Arts, &c. 1785, mention is made of a straw hive, consisting of two cylinders, separated from each other by lattices, for collecting the honey without destroying the Bees.—A drawing is preserved in the Society's collection.

c. Honey may be taken without destroying the bees, by putting under the hive another with a flat board on the top, and a square hole in the middle for the bees to descend through: there must be a sliding shutter to the hole to close it, when the bees have descended into the lower one—They will sometimes fill this also, and require a second to be put under—The time for taking, the end of June or beginning of July.

d. In Russia, hives are made for Wild Bees in the following manner—They look out for the strongest and straightest tree, and of the hardest wood, on which they construct the bee-house, by hollowing out the trunk, plain and smooth, with a tool resembling a chissel; closing the aperture with a board, in which are left little holes for the bees to enter at. The height of the tree, is to prevent bears getting at the honey.

2. HONEY

- a. Collected from the flowers of heath, is brown, strongly flavored, and of the consistency of melted rosin; the wax is brown.
- b. Collected from the flowers growing in meadows, pasture lands, trees, and cultivated crops, is almost as limped as the purest oil, and the wax nearly as white as snow. "Collected from Buckwheat, is harsh."
- c. Is collected from what is improperly called honeydew, as well as from flowers.
- d. Taken only once in two years is richer and more solid, and will keep better than what is taken every year.

3. BEES

a. When their stores are exhausted, should be fed with honey hard pressed from the comb; which contains bee-bread as well as honey.—*Cannot be kept alive with pure honey alone.*

Fed by covering a plate with thin cut comb, and filling the cells, either with honey or coarse sugar, mixed with middle beer—it must not be too thick.

c. A stock will swarm twice; the first swarm again twice, and the second once.

Some years a stock, will increase itself to six stocks.

d. The bees of one society will attack those of another society, plunder them of their honey, and destroy most of them, perhaps all of them, in battle. The best method of putting a stop to these battles, is to remove the attacked hive to a distant part of the garden.

HUMBLE BEES.

If a nest of the common Humble Bee (*Apis Terrestris*), or of the black Humble Bee (*A. Subterranea*), is taken late in the evening, and confined for the night

in a hive or box; they will not afterwards forsake it, but increase their comb and breed.

BEET. (*Beta Vulgaris*.)

1. With a red root.
 - a. Common red B. .
 - b. Turnep-root red B.
 - c. Green-leaved red B.
2. With a white root.
 - a. White-leaved.
 - b. Green-leaved.
 - c. Swiss or Chard B.
 - d. Cicla (B. *V.* Cicla.)

Culture, &c. of Red Beet.

1. SOIL.

- a. Requires a deep light soil, and open situation.

2. SEED.

- a. Sown in March or April broad cast on rough ground, and trod in before the ground is raked.
- b. Sown either alone, or with carrots, parsnips, or onions, which must be drawn young.
- c. Drilled.

3. PLANTS.

- a. The broad-cast to be thinned to a foot distance, or in very good land to $1\frac{1}{2}$ foot.
- b. The drilled to be thinned by degrees to 1 foot apart.
- c. The roots may be either taken up in November, and preserved like carrots in sand, or left in the ground.
- d. Old roots to be planted in February two feet asunder, for seed.

4. USE.

- a. The root is either used as a pickle, eaten boiled, or fresh in salads.
- b. Is used to improve the colour of claret.

Culture, &c. of White Beet.

1. PLANT.

- a. The culture is the same as that of the red beet.

2. USE.

- a. The leaves in soups; the mid-rib of very large leaves are peeled, stewed, and eaten like asparagus.

The largest leaves should be first gathered, leaving the smaller to grow larger.

The roots are called Chards.

- b.* The roots of variety *d* are used medicinally; and in Prussia to make sugar—110 lbs. of the roots washed, peeled, cleaned, and then grated, produced, by a certain process, 4 lbs. of white sugar, and $3\frac{1}{2}$ quarts of a spirit resembling rum. The red is also used for the same purpose, 1500 quintals of which have produced 5952 lbs. of sugar in gross, 450 quintals of husky matter, and 100 oz. of syrup: the squeezed substance may serve as a sort of coffee, and for distilling brandy; and is more profitable for the feeding of cattle, than the beets themselves. (See, *post*, Mangel Wurzel, or Scarcity-root.)

BERBERRY. (*Berberis Vulgaris*.)

- Var. 1. Red with stoney fruit. 2. Red without stones.
3. White. 4. Sweet black B.

Culture, &c.

1. INCREASED.

- a.* By seed—Sow the ripe berries in autumn, in drills an inch or more deep; probably most of them will lay in the ground till the second spring.
b. By suckers taken from the root in autumn, with as much roots as possible.
c. By layers—Choose young branches of last summer, and lay them in autumn or winter, and by the autumn following they will be rooted.

2. TREE.

- a.* Planted of four or five feet high; and at any time from November till March.
b. Prune irregular and crowded branches, shoots from the stem, and suckers from the root.

3. USE.

- a.* The fruit for pickling; and boiled with sugar form a most agreeable rob or jelly.
b. The inner bark of the stems dyes linen of a fine yellow with the assistance of allum.

In Poland they dye leather of a most beautiful yellow with the bark of the root.

- c.* The roots boiled in lye dye wool yellow.
d. The inner bark is used medicinally.

BIRCH. (*Betula Alba.*)*Culture, &c.*

1. SOIL.

a. Grows in all kinds of soil; but best in shady places.

2. INCREASED.

a. By seed, which is easily taken from bearing trees, by cutting the branches before it is quite ripe in August; and may be thrashed out like corn, as soon as the branches dry a little.

The seed to be sown broad-cast in autumn—two bushels per acre.

b. By layers.

3. TREE.

a. The wood is firm, tough and white.

b. As underwood, should be felled before March to prevent its bleeding.

c. Bears removing with safety of the height of six or seven feet.

d. Is hurtful to pasturage.

e. Is ready to plash as hedges in four years after planting.

4. USE.

a. The wood is used by the wheelwright for ploughs, carts, and most of the rustic implements; by the turner for trenchers, bowls, ladles, small screws, &c. by the cooper for *hoops*. The wood is also used by clog-makers and shoe-heel cutters; and also serves for light *gates and rails*.

b. The knotty excrescencies afford a beautiful veined wood.

c. Besoms are made of the twigs, and the branches serve for handles.

d. Makes strong *bedges*.

e. The leaves yield a yellow dye; but those of the Dwarf Birch (*B. Nana.*) afford a better.

f. The bark has been used to tan leather, and even fishing nets, and sails; which it renders more durable: and also to make ropes. The outer rind is, in Scotland, sometimes burnt instead of candles.

The inhabitants of Poland distil from the bark *per descensum*, an oil of an empyreumatic strong smell, which they use in sprains, and to help limbs that have

suffered by cold; and to heal wounds, and destroy the itch, and lice on cattle.

g. Russian leather is dressed with a kind of tar, extracted by fire from the bark of this tree; which is then dyed with log-wood.

b. The white bark or rind is of so firm a texture, that it will escape putrefaction for many years, even in the dampest places; and is therefore spread by the Norwegian peasants over the planks with which their houses are covered, and upon this rind they lay green sward or turf for the sake of warmth.

"The Indians and Canadians of North America make Boats of the bark, which are so light that they sometimes carry them with them on their journeys from lake to lake. The Indians of Nova Scotia have been known to cross the Bay of Fundy in them. They also make baskets, boxes, &c. of this bark, and curiously ornament them with porcupine quills coloured."

i. Affords excellent *fuel*, and makes the best of *charcoal*; and the soot is a good *lamp-black* for making printer's ink.

k. If a hole is bored into the tree when the sap rises in the spring, a sweet liquor distils from it, which, properly fomented with the addition of sugar, makes a pleasant wine.—It has been supposed, a coarse sort of sugar might be produced, by boiling the sap.

One branch alone will yield a gallon in a day.

BIRD-CHERRY.

1. English Bird-Cherry. (*Prunus Padus*.)

2. American Bird-Cherry. (*P. Virginiana*.)

Culture, &c. of the English Bird-Cherry.

1. SOIL.

a. Grows well in woods, groves, or fields, but not in a moist soil.

2. INCREASED.

a. By seeds sown in autumn.

b. By layers, laid down in autumn; they will have good roots by that time twelvemonth.

3. TREE.

a. Grows 10 or 12 feet high.

- b.* Bears lopping, and suffers the grafts to grow under it.
- c.* The wood is smooth and tough.

4. USE.

- a.* The wood is used for cabinet work.
- b.* The fruit, which has a nauseous taste, is eaten in Sweden and Kamtschatka.
- c.* Makes an exceeding good underwood.

Culture, &c. of the American Bird-Cherry.

1. INCREASED.

- a.* By the same methods as the former.

2. TREE.

- a.* Grows to 30 feet high.
- b.* The fruit is large and black.

3. USE.

- a.* The wood being beautifully veined with black and white, and taking a smooth polish, is frequently used for cabinet work.

BLIGHT.

The withering and dropping off of leaves, blossoms, or fruit; and the death of plants and trees; arising either from frost, cold or very hot winds, or insects—Gardeners make use of the following methods to guard against them.

1. FROST.

- a.* Straw or dung is often laid on the roots; but clean moss is to be preferred for newly planted fruit trees.
- b.* By sticking between the branches of wall trees, cuttings of evergreens or fern, till the fruit is fairly set.
- c.* By mats nailed up before the trees, when there is an appearance of frosty nights; if the frost continues long, and no sun, let them remain up in the day also, but must be removed at every favourable appearance of moderate weather.

2. COLD WINDS.

- a.* By live hedges; of these yew make the best.
- b.* Reed screens.

A dry hot wind frequently occurs in summer, and scorches the leaves, so as to make them turn black and brittle, but it is often so weak, as not to penetrate through a hedge.

3. INSECTS

- a.* For wall trees—To a hogshhead of clear lime water add 6 lbs. of flour of brimstone, and 4 lbs. of tobacco dust, or, which is better, a pint of a liquid that is squeezed from tobacco in pressing: this is to be sprinkled on the trees between seven and nine o'clock in the morning, at least three times a week, from the time the buds begin to burst.
- b.* By smoaking the trees. (See Apple blossoms.)

"BORDERS AND HEAD-LANDS.

"Too much *neglected*; but are applicable to enlarging the *compost manure*, under the most advantageous circumstances."

BORECOLE.

1. Green curled Borecole—There is a variety with variegated leaves, which is planted in gardens for ornament.
2. Brown or red Borecole.
3. Siberian Borecole, commonly called Scotch Kale.

Under this head may be reckoned,

1. Jerusalem Kale.
2. Brussels Sprouts.
3. Tree Cabbage, leaves nearly flat.

All the above plants grow tall; do not turn in their leaves to form a close head; but furnish numerous sweet and tender sprouts, from the sides of the stalks.

Culture, &c.

I. PLANT.

- a.* The culture is the same as that of the Savoy, except that the plants should be set only 1 foot asunder in rows 2 feet distant.
- b.* An Irish acre of fallow ground, on which they were planted at two feet distance, and hoed in the Tullian method, produced plants which weighed about 5 lb. 10 oz. each, on an average, and the whole produce was 40,096 lbs.
- c.* Planted between drilled potatoes (after they were well hoed) for winter feeding cattle.

2. USE.

- a. The borecole is a very profitable table vegetable, but is never eaten till the frost hath rendered it tender, for otherwise it is tough and bitter.
- b. It has been recommended to the attention of the farmer or grazier, on account of the *rapidity of its growth*, and the property of *withstanding the effect of severe frost*.—Sheep should not be suffered to depasture so long, as to injure the stalks.

BRITISH WINES.

1. *Birch wine* (Receipt) In the beginning of March, while the sap is rising, and before the leaves shoot out, bore holes in the bodies of the largest trees, and put fassets therein, made of elder sticks, with the pith taken out, and then put any vessel under to receive the liquor: if the tree be large, you may tap it in four or five places at a time without hurting it; and thus from several trees many gallons of juice may be gained in a day. If you have not enough in one day, bottle up close what you have, till you get a sufficiency for your purpose; but the sooner it is used the better. Boil the sap as long as any scum rises, skimming it all the time. To every gallon of liquor put 4 lbs of sugar, and boil it afterwards half an hour, skimming it well; then put it into an open tub to cool, and when cold, turn it into your cask; when it has done working, bung it up close, and keep it three months; then either bottle it off, or draw it out of the cask after it is a year old.

This is a generous and agreeable liquor.

2. *Black Currant Wine*. The process of manufacture is merely that of macerating the fruit, in an equal quantity of cold water, two or three days; then boiling the whole slowly, until the fruit is dissolved; when the liquor is strained off. Reboil the liquor, gently, a short time; and add a quantity of sugar, proportioned to the given richness of the fruit; ferment, and lay up, agreeably to the methods practised with other fruit liquors.

This wine approaches very near red port wine, in colour and flavour.

3. *Red Currant Wine.* Gather the currants when they are fully ripe; break them into a tub or vat; then press and add two-thirds of water, and to each gallon of that mixture put 3 lbs. of soft sugar; agitate the whole properly till the sugar is dissolved, when it may be barrelled. The juice should not be left to stand during the night, as the fermentation ought not to take place, till all the ingredients are compounded. "An excellent process for making it is in the American Philosophical Transactions. It is the very best."

Sir Richard Worsley has planted *a Vineyard in the Isle of Wight*, of two acres and a half, with the *White Muscadine* and *Plant Verd* grapes; from which the natives of the western parts of France make a *light white* wine.

BROCOLI.

1. Early purple Italian B. This is by some preferred to all others.
2. Late purple Italian B.
3. Green Italian B.
4. White Italian B.

Some kinds of Italian B. produce bulbs at their roots.

5. Cauliflower B. In look and taste is very like the Cauliflower.
6. Brown or black B. This is very hardy, and grows very high, but is inferior in taste to the above.
7. Dwarf purple B.
8. Brimstone B. The head of this is as large as that of the Cauliflower B. and of a yellow colour; it is esteemed a good sort. Said to have been brought first from Portsmouth.

1. SOIL.

- a. Succeeds best in a soil that is rather light than heavy.

2. SEED.

- a. In order to save good seed, reserve a few of the largest heads of the first crop, stripping constantly off all under shoots, leaving only the main stem to flower and seed (no sort of cabbage should be suffered to seed near them) and tie them to strong stakes, to prevent their being broke by winds and heavy rain.

3. FIRST CROP.

- a. Seed to be sown the latter end of May or beginning of June.
- b. When the plants have eight leaves, to be pricked out into shady borders, about 3 or 4 inches apart.
- c. To be again planted the end of July in some sheltered spot, but not under the drip of trees, $1\frac{1}{2}$ foot in the row, and 2 feet between the rows: the brown or black 2 feet every way.

4. SECOND CROP.

- a. The seed to be sown the beginning of July, and the plants treated like the first crop.
- b. Some do not make two distinct crops, but sow from February to June, laying however most stress, on what they sow in April and June, for full crops.
- c. In exposed situations gardeners, in autumn or spring, dig a deep sloping ditch, lay the plants on it, so as to be about 1 foot above ground, and 1 foot apart; on these they lay earth, and a second row, &c. or dig deep holes, and plant them in it about half the depth of the stem, and at the common distance.

5. USE.

- a. For the table.

The heads should be cut off with about 4 or 5 inches of the stem, and the skin of the stem stripped off before they are boiled: The plants will shoot out a number of side sprouts with small heads, full as well flavoured as the large, and are called by some *Italian Asparagus*.

- b. The brown has been cultivated for cattle.

BROOM.

- 1. Common Broom. (*Spartium Scoparium*).
- 2. Spanish Broom. (*Spartium Junceum*).

Culture, &c. of Common Broom.

1. SOIL.

- a. Grows naturally in this island in dry sandy soils.

2. USE.

- a. For making *brooms*.

- b. For *tanning* of leather; in which intention the twigs and branches are not inferior to oak-bark.
- c. Is *preferred to straw for covering* stacks, as it admits the air more readily into the stack than straw does, and equally well secures it from rain. Is also used for *thatching* houses.

In Sweden it is cut in autumn, and used as *litter* for housed sheep.

- d. The old wood furnishes the cabinet-makers with most beautiful materials for veneering.
- e. The tender branches are in some places mixed with hops for *brewing*.
- f. The macerated bark is found capable of being manufactured into cloth.
- g. The flower buds are pickled and eaten as capers.
- h. *Sheep* sometimes eat it in winter; but they are greedy of the blossom; they also eat the young pods.—Shepherds turn them into fields where it grows, to cure them of the dropfy.

Culture, &c. of Spanish Broom.

1. INCREASED.

- a. By seed sown either in the spring or autumn.
- b. By laying down the tender branches in March, and cutting them at the joints, after the manner of *Carnation* layers: but this way is not so certain, and more troublesome, than the raising of them from seed.

2. SHRUB.

- a. Should be planted where they are to remain at not more than two years old, as they do not succeed if they are removed large.

3. USE.

- a. The twigs for making *baskets*.
- b. The flowers affording much *food for bees*—The culture of this shrub is recommended near bee hives, by writers on the management of those useful insects.

We raise another sort of Spanish broom from seed in this country, it is called the white (*Spartium Monospermum*); it appears to be too tender to be turned to any account in this country: where it grows naturally it is useful in *stopping flying sands*; goats eat the leaves

and young branches ; and the twigs are used for tying bundles.

" BROOM-CORN.

" A useful plant (the cheapest and best) for making *brooms, velvet whisks, &c.* The grain for poultry, &c. Some hills or rows of it in gardens suffice for family purposes."

BUCKWHEAT. (*Polygonum Fagopyrum.*)

Culture, &c.

1. SOIL.

- a. A light mellow soil suits it best.
- b. Does not thrive on a stiff clay or poachy ground.

2. SEED.

- a. From one to three bushels sown per acre. Light land requires the most seed.
- b. Sown from the first week in May till the beginning of July.
- c. Sown with clover or other grass seed.

3. PLANT.

- a. Two crops have been got in a favourable year from the same land—Is mowed.
- b. Kills all weeds by being of quick growth.

4. USE.

- a. The seed makes a nutritious meal, which is not apt to turn sour upon the stomach.
- b. The meal fattens *hogs* and *poultry*.
- c. *Horses* are fond of the grain.
- d. The flowers afford food for *bees* at a season when the meadows and trees are nearly stripped of them.
- e. Sown *with grass seeds* makes a good lay on a light soil.
- f. Affords straw for *fodder* or *manure*.
- g. When full grown is rolled (or first fed and trodden down by cattle) and *ploughed* in as a manure.
- b. As a *fallow crop*.

Vegetables that have a succulent leaf, such as buckwheat, vetches, peas and beans, draw a great part of their nourishment from the air, and on that account impoverish the soil less than wheat, oats, barley, or rye.

Buckwheat was first brought from Africa into France by the *Saracens*; and from France into England.—Is called by many French-Wheat.

BUDDING.

In performing this kind of grafting, the bark of the stock is cut on the north side, perpendicularly, about two or three inches, and gently opened with the handle of the budding knife; and the bud (such as contains only the flower) being put in with the greatest care, the bark is closely tied down with *wet bafs* or matting. This should be done, if possible, in a moist or cloudy day, early in the morning, before the heat of the sun prevails, or, in the afternoon, after it has subsided; as all hot and sultry seasons are unfriendly to this process.—It is used for the finer fruits, such as peaches, apricots, nectarines, &c. Some gardeners call it Inoculation.

BULL.

The cow-keepers near London allow about one bull to thirty cows—In some counties they are let leap while yearlings; and in Suffolk they never keep them more than three years old; the ill consequence of which is, that before the merit can be known of the stock gotten, the bull is no more.

Farmers call the bars of a harrow, in which the teeth are fixed, *Bulls*.

BULLACE. (*Prunus Infinitia*.)

Varies, with White, Black, and Red Fruit.

Culture, &c.

I. INCREASED.

- a. By stones of the fruit; if sown an inch or two deep in autumn, they will come up in the spring; and when a year old should be planted out in the nursery.
- b. By grafting or budding on their own, or any sort of plum stocks.

2. TREE.

- a. Trained as a moderate standard, with a clean single stem, branching regularly at top to a full head.

b. Planted 20 or 30 feet asunder.

Grows wild in hedges.

3. USE.

a. The fruit—This does not ripen till September or October, and is the more valuable, as it comes in when most others of the plum kind are gone; it is excellent for tarts, pies, &c. and when fully ripe, eats agreeably as a desert fruit.

A conserve is prepared by mixing the pulp with thrice its weight of sugar.

b. The bark and flowers are used medicinally.

BURN-BAITING

Is the cutting off the turf or surface of the ground, and when sufficiently dry, putting it in small piles, and burning it to ashes, which are spread (in some places mixed with lime) on the bare surface, and ploughed in: It is in the opinion of many intelligent persons a dangerous practice, unless done very judiciously, and the land well supported with manure afterwards; it has even been compared to the use of spirituous liquors, in the human system, which is invariably followed by debility and disease.—Under some circumstances it is however allowed to be of use, and at all times produces one or two good crops.

May be practised with advantage,

1. On *land over-run* with furze, broom, bramble, or heath, *where the roots would require a long time to rot.*
2. On *long neglected pasture*, with a thick spongy covering of moss.
3. A thin chalky soil, is said to be much improved by it.

Additional ways of burn-baiting.

1. The following way of paring and burning, which is practised in Shropshire, differs from the usual method. The swarth is pared near two inches thick, and laid round a small faggot of wood, large enough, when burnt, to blacken and scorch the sward reared round it, the burners not holding it good to reduce it to a red ash; thus, in its coarse, but scorched state, it is spread upon the land when ploughed, being first got into rows to make way for the plough; and these blackened lumps, &c. do

often produce an extraordinary crop of wheat, though upon land not worth more than seven shillings per acre, and the succeeding crops generally answer as well.

2. The sod turned upside down with the spade, and when dry, owing to the heath and grass raising it a few inches from the ground, burnt, without making it up in heaps—A very good natural grass followed this method, without ploughing: It was accounted for, from the fire having been thus applied all over the surface, in a state of smothering combustion.

BASTARD BURN-BAITING.

This practice consists of burning the refuse product of the land, such as stubble, &c. upon the ground which produced them; or whatever else is laid on for that purpose.

1. Burning of sedge on wet land, a successful practice.
2. Burning stubble upon corn-fields.
3. Burning of any waste produce, as broom, &c. on heaths and commons; piling it in heaps, and covering them with the earth raised in digging up the roots: the ashes spread and ploughed in.
4. The bringing of sticks, stubble, &c. to impoverished land, and burning them there.

More benefit is supposed to arise, from the enlivening warmth communicated to the ground by so many fires, than from the ashes. " *Insects* and their *eggs* are destroyed by *burning* stubble; *rake* it first in heaps."

BURNET. (*Poterium Sanguisorba*.)

Culture, &c.

1. SOIL.

- a. Flourishes on poor, light, sandy, or stoney soils; or even on dry chalk hills.
- b. The land to be prepared as for turneps.

2. SEED.

- a. Perfects its seed twice in the summer.
 - b. Sown late in the spring with barley or oats.
 - c. Sown in August after oats; 12 lb. of seed to an acre.
- The plants thinned to one foot distance.

d. In a failure of turneps, land has been sown with Burnet, and produced, in March following, a fine pasture for sheep and lambs.

e. Sown on a small piece of land the beginning of July; and the plants transplanted in October, in rows 2 feet apart, and about 1 foot distance.

May be increased by parting the roots.

3. PLANT.

a. Allows of three mowings in a season.

b. Severest frost does not injure it, nor close feeding.

c. Harrowed after being fed with cattle.

4. USE.

a. Proves an excellent winter pasture when hardly any thing else vegetates.

It is a singular circumstance, that cattle are fond of burnet raised upon some land, but will not touch it raised upon other land, though on a soil similar in appearance. If sown with Ray-grass and White Clover, or with the latter alone, they will be induced the better to like it.

b. The seeds as good as oats for horses: "And its quantity considerable."

c. Increases the quantity of milk in cows; and makes good butter.

d. The mutton of sheep fed on it, better coloured, more juicy, and better flavoured, than mutton fed on any other food.

e. A perfect cure for the rot in sheep; and recovers sheep that have scoured.

f. Excellent winter food for Deer and Rabbits.

This plant was introduced into husbandry by the late Mr. *Roque*, under the patronage of the London Society of Arts. "It is well worth the husbandman's attention."

Meadow Burnet (*Sanguisorba Officinalis*) grows very luxuriantly in cold and very poor wet uplands, and has been thought worth cultivating in such situations.

BUTTER.

1. FRESH BUTTER.

a. In an experiment made to know whether it was most profitable to churn the whole milk, or only the cream

which the milk produces, the milk of a particular cow was selected, and it was found, that one days milk churned by itself, produced only three-fourths of 1 lb. of butter; and the cream of two days milk produced 3 lbs. 2 oz. of butter; from this, *it appears, more profitable to collect the cream and churn it, than to churn the whole milk together.* The cream butter is thought the richest of the two, but will not keep so long sweet. Respecting, however, the above experiment, in farther explanation of the circumstances, it appears, that the one day's milk was collected from the noon of one day, to the morning of the next, then immediately churned; whereas the two days cream was collected on a Thursday and Friday and remained to ripen till the Monday following, which may, perhaps, account in a great degree, for the difference in the produce.

- b. It is said, that in some places famous for making the best fresh winter butter, they set the pot of cream in warm water so long as till it has acquired that small degree of sourness, which it very soon has in warm summer weather, and gives it its agreeable flavour. And in order to give it colour, they grate a well-coloured carrot into a little milk, which, as soon as stained, is strained from the carrot through a sieve, and then mixed with the cream.
- c. Whey butter—The quality of this is improved, by scalding each meal of cream, as it is taken off the whey, by hanging it over the fire until scalding hot; being careful not to let it boil. (See, *ante*, page 23.)

2. SALT BUTTER.

- a. The following mode of curing butter is practised by some in the parish of Udney, in the county of Aberdeen, which gives to it a superiority above that of others.

Take two parts of the best common salt, one part of sugar, and one part of saltpetre; beat them up together, and blend the whole completely: take 1 oz. of this composition for every 16 oz. of butter, work it well into the mass, and close it up for use.

The butter, cured with this mixture, appears of a rich marrowy consistence, and fine colour, and never

acquires hardness, nor tastes salt; it eats as sweet after being kept three years as at first. It must be noted, that butter thus cured, requires to stand three weeks or a month before it has begun to be used; if it be sooner opened, the salts are not sufficiently blended with it; and sometimes the coolness of the nitre will then be perceived, which totally disappears afterwards. (See p. 52.

BUTTER-BUR. (*Tussilago Petasites*.)

Culture, &c.

I. PLANT.

a. This is a native plant, growing in wet meadows and by river sides; the leaves are the largest of any native plant in *Great-Britain*; and in heavy rains are frequently observed to afford a seasonable shelter to poultry and other small animals.

2. USE.

a. In *Germany*, the leaves are bruised, and mixed with chaff, or cut straw; in which state they are fondly eaten by cattle.

b. It is used in medicine.

CABBAGE. (*Brassica Oleracea*.)

FIELD CABBAGES.

1. *Turnep Cabbage* (*B. O. Caulorapa*)—Bulb above the surface of the ground—Supposed to have been brought from the Cape of Good Hope; perhaps from China, where a bulbous rooted cabbage is cultivated; called by the natives, *Pack-so-a*.

2. *Turnep-rooted Cabbage* (*B. O. Nepobrassica*.)—Bulb under the surface of the ground—Brought from Lapland.

3. *Drum-headed Cabbage*.

4. *Scotch Cabbage*—The head not quite so close and flat as the last.

5. *Coleworts*. (see Colewort.)

6. *North American Cabbage*.

7. *Anjou Cabbage*.

Culture, &c. of the *Turnep Cabbage*.

I. SOIL.

a. Delights in a dry, elevated, and rather light soil.

2. SEED.

- a. May be sown from the middle of March, to the first or second week in May.
- b. Should be sown very thin.
- c. Best raised on a seed bed, and transplanted from five to six weeks old.
- d. Ripens about the middle of July.

3. PLANT.

- a. Very hardy.
- b. To be planted in rows from 3 to 5 feet apart, and not less than 3 feet from plant to plant.
- c. If intended for spring feeding, should be planted at the beginning or middle of July.
- d. The best time of feeding off the crop, is from the middle of March, to the latest possible time the land can be spared.
- e. Not to be planted very deep, or earthed very high, or hoed in wet weather.
- f. The bulbs fit for use in October.
- g. Average weight of the bulbs about 5lb. many reach 8lb. or 9lb. and some few 14lb. or 15lb.
- h. The bulbs may be kept a long time in a barn or shed.

4. USE.

- a. Excellent food for *sheep, cows, and horses*.
- b. More nutritive than the common turnep, and are readier come at when the ground is covered with snow.
- c. An excellent *spring food*.
- d. The *sprouts* may be cut off even when in blossom, and when withered given to sheep and cows.
- e. For the table the rind must be taken off, and the bulb cut into small pieces, and treated as turneps.—The sprouts are very good.

Culture, &c. of the Turnep-rooted Cabbage.

1. SOIL.

- a. A dry sandy mixed soil suits it best.
- b. Suited to the uplands and wolds.
- c. The land to be prepared as for turneps.

2. SEED.

- a. To be sown the beginning of June.

b. Half a pound of seed sown on a seed bed of two or three perch square, will raise plants sufficient for an acre. If they run too much to stalk must be transplanted to check them.

Wood ashes or foot to be sown on the young plants, if attacked by the fly.

c. Produce from the broad cast has been $24\frac{1}{2}$ tons per acre in April, before their tops had sprouted above 3 inches high.

3. PLANT.

a. Very hardy.

b. To be planted about midsummer at 2 feet distance.

c. Hand-hoed at a fortnight, earthed by a common plough passing up and down each interval: and, lastly, hand-hoed again—The broad cast twice hand-hoed like turneps.

d. The roots weigh from 4lb. to 10lb.—In taste and consistence resemble the kernel of the cocoa-nut. The rind being very hard, the bulbs must be cut in half for the cattle.

e. As the roots are difficult to pull up, a light mattock-like hook has been used, having a claw on one side of about 9 inches length, with a transverse edge at its end, of about 2 inches width, and at the other a kind of hatchet, or more properly cleaver; with this, the roots may be taken up with ease; its handle, of about $3\frac{1}{2}$ feet in length, acting as a lever for the purpose. When the root is up, it receives a stroke or two with the side of the implement, by which its fangs are in a great degree divested of their dirt; and another, with the hatchet or cleaver on its back, which divides it in two; by such division, the sheep's teeth being introduced into the centre of the bulb, they work their way outward to the shell, and thus, with great facility, devour the whole, or nearly, shell, fangs and all.

f. If given in winter to sheep they bring on a sort of white flux, of which the sheep soon recover on a change of food; and sometimes gives to their urine a deep red cast, like the red water, but no harm has ever followed it.

4 USE.

a. One great advantage attendant on them is the vast

abundance of food they supply by their bushy tops in the spring.

b. Raised for feeding *Oxen, Cows, Sheep, Horses, and Hogs.*

Are either pulled up and carried to the stables and ox-houses, or eaten on the ground; in this case, they are first fed with the fatting stock, then the lean, and afterwards with hogs.

When ewes are penned, the lambs have been suffered to run through holes in the hurdles over the fields, and thereby keep pace with their dams.

e. We have two instances mentioned of the great quantity of food this plant affords; in the first, an acre supported 70 sheep for a month; and in the second, 140 for the same time.

Culture, &c. of the Drum-headed Cabbage.

1. SEED.

a. Sown the end of February or March on a seed bed.

b. Sown in August, plants set out in November, and transplanted for good in July.

A hardy variety has been produced of this cabbage, by planting it alternately with the red; and when the seed-pods were perfectly formed, cutting down the red, and leaving the other for seed. This variety was of a deep green colour with purple veins, retaining the size of the drum-head, and acquiring the hardness of the purple.

2. PLANT.

a. Planted 18 inches distance every way.

b. Planted in rows from 3 to 4 feet asunder, and 18 to 30 inches from plant to plant; hoed by the plough between the rows, and by hand in the rows.

By giving much room have been brought to grow to such a size as to weigh 92lbs.

c. Instead of planting with the dibble, laid carefully on the side of a furrow, and, as the plough returns, it covers the roots with accuracy and dispatch.

d. Said to make bad tasted butter.

The disagreeable flavour of butter or cheese, arising from cows feeding upon turneps or cabbages may be prevented; if, when the milk is set abroad in the leads,

one gallon of boiling water is put to six gallons of milk; or by dissolving nitre in spring water, and putting about a quarter of a pint to 10 or 12 gallons of milk, when warm from the cow. Cabbages are said not to give a bad taste to butter, if the precaution of breaking off the loose leaves be taken, and only the sound heart given to the cows: other cattle will eat the leaves.

3. USE.

- a.* Inferior to turneps for fattening, but superior in the increase of milk, either of cows or ewes; and therefore they are particularly good where there is a dairy, or a breeding flock of sheep.

Contrary to the above, it is asserted, that they are excellent for fattening cattle; having an astringent quality so opposite to that of turneps, that six weeks are saved in fattening a beast.

Culture, &c. of the Scotch Cabbage.

1. SEED.

- a.* Sown in April.
b. Sown in August; the plants from this are transplanted in beds in October, and set out in the field in March or April, about 3 feet distance, to be hand-hoed and twice horse-hoed during the summer.

2 PLANT.

- a.* Not affected by the frost.
b. Grows very well on moor land.
c. Planted immediately after a potatoe crop is taken up.

3. USE.

- a.* For feeding oxen and sheep.

Culture, &c. of the Anjou Cabbage.

1. SEED.

- a.* Sown on a bed in March; and the plants from it set out the beginning of May.

2. PLANT.

- a.* Cultivated in Glamorganshire, &c.
b. Said to be superior to any other; grows fast, stands the most severe winter, and produces a succession of many sprouts in the spring; and after repeated gatherings, will give a great quantity of seed.

- c. Planted in rows 4 feet asunder, and 2 feet from plant to plant.
- d. To be twice horse and twice hand-hoed.
- e. The leaves to be gathered for the cattle.
Cattle will not eat the leaves, when they are withered by frosty nights.
- f. Grows 7 feet high.

3. USE.

- a. *Cattle* like this plant, and thrive upon it.

GARDEN CABBAGES.

- 1. Early dwarf.
- 2. Penton.
- 3. Early Yorkshire—not apt to run to seed.
- 4. Early Russia—the head soon breaks and runs up to feed.
- 5. Early dwarf Battersea.
- 6. Early large Battersea.
- 7. Early sugar-loaf—a fine kind for a late summer cabbage.
- 8. Early Dutch.
- 6. Imperial.
- 10. Long-sided—a late sort.
- 11. Common winter.
- 12. Devonshire.
- 13. White.
- 14. Red.

Culture, &c.

1. SOIL.

- a. Rotten dung should be laid on the ground, which should be well dug one spade deep, and the dung properly buried in the bottom of the trenches.
- b. Where manure is scarce, a spit or two of earth is taken out (after the ground is dug) at a proper distance for the plants, and the dung laid at the bottom of the hole.

2. SEED.

- a. Should be sown in open exposed ground, distant from trees, fences or buildings; for when sown in such close situations, the plants are drawn up weak and long-thanked, and are liable to be eaten by vermin.

b. Sown from the latter end of February to the end of April for Spring, Autumn, and Winter use ; according to the kind of seed sown.

If sown in February on a moderate hot bed, it will much forward the plants.

c. Sown between the 6th and 12th of August, nor must it be sown later, there being an advantage in sowing just at that time : for was the seed sown sooner, many of the plants would be apt to run up to seed in March ; and was it to be sown later in the month, the plants would not get proper strength before winter.

d. Red to be sown from the middle to the end of March. The plants will continue good from Michaelmas to spring.

3. PLANT.

a. When the young plants have leaves, one or two inches wide, transplant them into beds, about $3\frac{1}{2}$ feet wide, in an open situation, but such as are to stand the winter in a warm one ; and the plants 4 or 5 inches apart—Water them immediately, and occasionally in dry weather.

b. In the spring, the early sorts to be planted $2\frac{1}{2}$ feet apart, and the late, a yard ; but in summer half a foot nearer.

c. The plants to be earthed up.

d. When the early plants have formed tolerable good heads, and begin to turn their inner leaves for cabbaging ; they may be greatly assisted and brought forward, by gathering their leaves regularly, and binding them round (but not too tight) with strong bafs or small osier twigs.

e. Plant cabbages for seed, from early in November till the end of February : the largest and best grown cabbages should be chosen (cabbage stalks with good heads will answer the purpose) divest them of the large leaves, and if they appear wet, hang them with their heads downwards for a day or two to dry, then plant them at three feet distance, in trenches so deep, that they may be buried up to the beginning of the head.

4. USE.

a. The green and white sorts for boiling.

b. The red for pickling.

CALF.

To have cattle of superior size and beauty, early tendency to fatten, and more nutritious flesh, the calves must be brought up with the milk of the dam—But various substitutes have been resorted to, especially with a view to fatten them for the butcher; receipts for one or two of which are here given.

1. Make a *jelly* of one quart of *linseed*, boiled ten minutes in 6 quarts of water, which jelly is afterwards mixed with a small quantity of the best hay-tea.
2. Take one gallon of skimmed milk, and in about a pint of it, add half an oz. of common treacle, stirring it until it is well mixed; then take 1 oz. of linseed oil-cake, finely pulverized, and with the hand, let it fall gradually in very small quantities into the milk, stirring it, in the mean time, with a spoon or ladle, until it be thoroughly incorporated: then let the mixture be put into the other part of the milk, and the whole be made nearly as warm as new milk, when it is first taken from the cow; and in that state it is fit for use. The quantity of oil-cake powder, may, from time to time, be increased, as occasion may require, and as the calf becomes accustomed to the flavour of it.

The usual method of conveying calves to distant markets, is, standing in the bed of a cart or waggon; but a different method is pursued in Northamptonshire, from whence they are sent into Essex, being 70 or 80 miles, in the following extraordinary manner—Sometimes 10, 15, or 20, are put into a cart, being laid on their backs on straw, and their feet tied: and are maintained frequently for 8 or 10 days together, on nothing but wheat-flour and gin mixed together, which are called gin-balls.

CANARY. (*Phalaris Canariensis*.)

Culture, &c.

1. SOIL.

- a. The land must be made very fine, and light on the surface.

2. SEED.

- a. Sown the first dry week in February, about four or five gallons per acre.

3. PLANT.

- a.* Hoed when necessary, with a Dutch hoe.
- b.* Is generally ripe by the beginning of September : requires much time in the field, and seldom suffers by wet weather ; it is tied in lumps of half a sheaf at a place, before it is fit to bind and carry to the barn.

Continues in the field sometimes till December, for without much exposure, it would be scarce possible to thrash out canary seed, it clings so remarkably to the husks.

4. USE.

- a.* It is cultivated for the sake of the seeds ; which are found to be the best food for the Canary, and other small birds.
- b.* From the seed is drawn one of the whitest, and best of oils, for the limner's use.
- c.* Its straw is good for cows, but sheep will not eat it ; for horses it is indifferent, and therefore should be cut into chaff, which is the best horse food of the kind that comes out of the barns.

Another grass of this genus is cultivated in our gardens for its beautiful striped leaves ; called Painted Lady-grass, or Ladies Traces (*Phalaris Arundinacea*). It is of use to thatch ricks or cottages, and endures much longer than straw. In Scandinavia they mow it twice a year for their cattle. Grows from 2 to 6 feet high.

CANKER.

A disease to which trees are subject ; it proceeds principally from the nature of the soil, and causes the bark to decay—The cures are,

- 1. Cutting off large boughs at some distance from the stem, and small ones close to it ; and then coating the wound with white lead and boiled oil, made into a kind of thick paint, with the addition of sublimate of mercury.
- 2. By transplanting the tree.
- 3. When a branch of a valuable tree is likely to be destroyed by the canker, inclose the affected part and some inches above it in a garden pot of earth, pre-

viously divided, supported by stakes, and tied together round the branch, which will strike roots in the mould; and which after some months, may be cut off, and planted in the ground: thus preserved, it will produce a new tree.

CAPSICUM. (*Capficum Annuum.*)

Culture, &c.

1. PLANT.

a. The seed should be sown in March on a hot-bed; the plants gradually inured to the air, and transplanted in a rich spot of ground and warm situation in May, about $1\frac{1}{2}$ foot asunder; if duly watered in dry weather, and the season proves not too cold, they will produce three or four crops.

2. USE.

a. As a pickle—The kind called Bell Pepper is the best for this purpose, having the softest rind; the fruit should be gathered before it is ripe, slit down one side to take out the seeds, after which, they should be soaked two or three days in salt and water, then drained, and boiling vinegar poured on them, sufficient to cover them, and closely stopped down for two months; then boiled in vinegar to make them green: they require no addition of any sort of spice.

CARAWAY. (*Carum Carui.*)

Culture, &c.

1. SEED.

a. Sown in autumn, when they will more certainly grow than when kept to the spring. The plants also which rise in the autumn generally flower the following season; so that a summer's growth is thereby saved.

b. Sown with Coriander—which see.

2. USE.

a. The seeds are by some put into cheese; and are used by the confectioners; they are also used medicinally, and perniciously distilled with spirituous liquors to give them a flavour.

b. The roots are said to be better eating, than those of the parsnip, which they resemble in shape; they also

afford a very agreeable pickle, when preserved in vinegar, sugar, &c

CARBON.

It is now completely ascertained by Chemists, that Carbon or *Charcoal*, dissolved in water, is the chief food of plants: the whole atmosphere contains always a quantity of it, in the form of carbonic acid or fixed air, which, being heavier than common air, is constantly falling down on the earth, particularly in the form of dew: hence, therefore, the great advantage of constantly stirring the earth between the rows of vegetables, by which it acquires a greater portion of this material, to be conveyed to the roots of plants.

Lime has also a great tendency to unite with carbon, either in the soil or in the decomposition of vegetable matter, and thus to render it soluble, and fit to enter into the plants as their food.

CARDOONS. (*Cynara*.)

Culture, &c.

1. SOIL.

- a.* A light soil; and a free open situation.

2. SEED.

- a.* Sown broad-cast in March or early in April.
b. Sown where the plants are to remain, in rows 5 feet asunder, by 4 feet in the row.

3. PLANTS.

- a.* Those from the broad-cast to be thinned, where too thick, to 5 or 6 inches asunder; the drawn plants may be pricked in a nursery bed.
b. When two months old to be transplanted finally in an open situation, 4 or 5 feet asunder; either on level land, or in shallow holes like a basin.
c. The plants to be gradually earthed up as they advance to their full growth, which is 3 or 4 feet—When the leaves are to be tied together with hay or straw bands.
d. In severe weather lay some dry litter round the best plants; or some may be laid horizontally, to be more conveniently covered.

4. USE.

- a.* The stalks of the leaves are the part which is used for soups and for stewing; but they must first be rendered perfectly white and tender, otherwise they would be intolerably bitter.

The Cardoon is a species of artichoke.

CARROT. (*Daucus Carota*.)

1. Sandwich Carrot. This is the kind cultivated by the Farmer.
2. Early or Horn Carrot.
3. Yellow and White-rooted Carrot.
4. Wild Carrot—not uncommon in fields.

Culture, &c. of the Field Carrot.

1. SOIL.

- a.* Sandy loam, of considerable depth, the most proper soil.

2. SEED.

- a.* Before sowing should be rubbed between the hands to take off the beards, which would make them stick together, and come up in patches; it should also be mixed with dry sifted saw-dust or sand.
- b.* End of March the time for sowing.
- c.* The quantity of seed to an acre 4 lb. or $4\frac{1}{2}$ lb. or even 8 lb. broad-cast— $3\frac{3}{4}$ lb. hand drilled—the rows one foot apart—2 lb. with Mr. Cooke's drill.

The produce, from 200 to 900 bushels per acre from the broad-cast—320 bushels hand drilled.

3. PLANT.

- a.* Grows best after turneps, as the land is freer from weeds, than after any other crop.
- b.* To be hoed three times; at the first the plants to be left at the distance of 6 inches—Some recommend harrowing after each hoeing.
- c.* Left in the ground will continue good till April.

These cannot be got at in very hard weather.

- d.* To preserve in fields: dig a trench about 3 feet wide and 8 or 10 inches deep: the roots being dug up and their tops cut off, they are to be placed as close to each other (perpendicular) as possible in the trench. When

the trench is full, they are to be covered with straw, and over the straw the mould that came out of the trench, by which means they are preserved from the frost, &c. and will continue perfectly good till May or June.

- e. If housed should be dug up in dry days in October (the tops cut off) and put up in small covered cocks of 10 bushels each; when dry are to be piled loose in out-houses, and protected from frost by a thick covering of straw.
- f. The best and healthiest roots are selected for seed, and set out upon the heaviest and strongest land in January.

4. USE.

- a. For *fattening Oxen and Sheep*; *feeding Cows, Horses and Hogs*, late in the *spring*; after turneps are gone. If sheep are half fat when put up, they will be wholly so in 100 days. One bushel per diem is an allowance for working horses instead of oats—Are esteemed particularly good for broken winded horses.
- b. The tops are equally valuable with the roots for Cows, Sheep, and Swine.

Of these *hay* has been made, by cutting them off with a scythe the latter end of June, but not so close as to injure the crown of the root: *the tops of a good acre will produce four tons of hay*. They must be taken off the ground to be made into hay; the trouble of making which, is little more than clover-hay.

- c. Attempts have been made to convert the expressed juice into wine, vinegar and spirits; the last was most promising, leading to a supposition, that a good acre of carrots would produce more spirits than an acre of barley.
- d. Carrots have been *malted*; and also peas, potatoes, and beans; but to little effect.

Use of the Wild Carrot.

- a. The seeds possessing a diuretic quality, are used in medicine, and being a grateful aromatic, are used to give a flavour to mead and ale.
- b. The Natives of the Western Islands of Scotland, make use of the seed of a white wild carrot (probably this plant) instead of Hops, for brewing their beer;

and they say that it answers the end sufficiently well, and gives the drink a good relish.

- c. The roots are sweet like the parsnip, and are eaten boiled with flesh meat.

Culture, &c. of Garden Carrots.

1. SOIL.

- a. Light ground, dug a spade deep, or double digged two moderate spades—The seed to be lightly trod in before the ground is raked.

2. SEED.

- a. For early carrots,

(1.) Sown on a moderate hot-bed, 2 feet thick of dung, with earth 8 inches deep, on which the seed is to be sown, and covered an inch deep with mould—The bed to be covered either with a frame, or with hoops and mats; air must be given when the weather permits, and the plants thinned to 3 inches asunder.

(2.) Sown on a warm border from October to the end of January—A precarious crop.

- b. Sown from February till near the end of August in open grounds—The main crop from the end of February till early in March.

- c. Sown in January with radishes.

3. PLANTS.

- a. When intended to be drawn young, to be thinned to 4 or 5 inches asunder; but if to attain their full growth, to 6 or 7.

- b. In November the roots to be dug up, and preserved in sand for use.

- c. Roots for seed, to be planted in February, 2 feet asunder.

4. USE.

- a. For the table.

" CARTS.

" Calculated for *one horse*, may be considered considerably preferable to other carts; for which see *Modern Treatise on Husbandry*."

NEAT CATTLE.

Arranged according to *their horns*; being the most obvious character.

(See articles of Cow and Ox for other particulars relating to the different breeds.)

1. With *long horns*—These have thick hides; afford the richest milk, but least in quantity.

a. Horns spread horizontally or upwards.

(1.) In Devonshire, Herefordshire, Suffex, &c.

(2.) Irish.

b. Horns curved downwards—In Staffordshire, Warwickshire, &c.

Downward horns, denote a heavy sluggish animal.

2. With *short horns*.

a. *Holdernefs Cattle*, breed principally in Yorkshire—Came originally from Holstein, and the low countries.

"A large *costly fed* cattle, of a coarse hard *meat*; giving the greatest quantity, but the poorest *milk*, or *water and milk*; therefore cow-keepers and milk-sellers prefer them. They are now rejected by husbandman."

b. *Lincolnshire*. Generally large and coarse.

c. *Alderney*. "Rather small, but give the *richest milk*, though not great in quantity."

3. Horns hanging loose by the skin—An accidental variety, that rarely occurs.

4. *Hornless*.

a. *Suffolk Duns*. Came originally from Poland.

b. *Scotch*. Common in the Highlands.

There were formerly wild cattle in Great Britain, of a pure white, and had, according to *Boethius*, manes—Their offspring (but without manes) are at present preserved in the woods of *Drumlanrig*, in N. Britain, and in the park belonging to *Chillingham* castle in Northumberland: they are white, with a black muzzle, and ears; their horns fine, with a bold and elegant bend: are as wild as deer, and never mix with the tame. The weight of an Ox is 38 stone, of a Cow 28.

CAULIFLOWER.

Culture, &c.

I. SEED.

a. Sown in January on a hot-bed, for plants to succeed the winter standing plants if destroyed by frost.

b. Sown in January on a warm border, for plants to place out in April and May.

- c. Sown from March to June, for late summer and autumn crops.

Radishes should be sown with this crop, which will draw the flies from the plants, and prevent their eating the leaves full of holes, to the prejudice, and sometimes to the destruction of the plants.

- d. Sown between the 21st and 24th of August for plants to be planted in September, in frames, hand-glasses, and warm borders.

2. PLANT.

- a. The winter plants on warm borders, to be defended with mats.
- b. Plants wintered in frames, to be planted in March, $2\frac{1}{2}$ feet asunder, in a compartment of rich ground.
- c. Those under hand-glasses to be planted out in March or April, except two under each glass, which are to be earthed up, and the glasses raised 3 inches; and wholly removed in May.

If bell-glasses are incautiously put over the plants early in a frosty morning, a dense transparent scalding vapor will be generated, that will burn and kill them.

- d. When the heads appear, the end of the leaves are to be broken down over them, to keep off sun and rain.
- e. In June some of the best early plants are to be left to stand for feed.

3. USE.

- a. For the table; both fresh and pickled.

CEDAR.

1. Cedar of Libanus (*Pinus Cedrus.*)
2. Red Cedar (*Juniperus Virginiana.*)

Culture, &c. of Cedar of Libanus.

1. SOIL.

- a. Grows well in a strong clay, and lofty situation.
- b. In a lean hungry soil, mixed with gravel.

2. INCREASED.

- a. By seed—The cones should be soaked for 24 hours, and then split, by driving a sharp piece of iron through the centre lengthways, when the seeds may be taken out with ease.
- b. By layers.

a. By grafting on the Larch.

3. TREE.

a. Supposed to have been first planted in England, by Mr. Evelyn, about 1683.

b. The largest tree in England in 1799, was 70 feet high; greatest circumference of the trunk 20 feet; horizontal extent of the branches, on an average, 100 feet.

One, which Maundrel mentions in his travels to have measured on Mount Libanus, was 12 yards 6 inches in girth, and 37 yards in the spread of the branches.

c. The wood is very dry, and apt to split.

4. USE.

a. A valuable material in the hands of the joiner and cabinet maker.

Should be fastened with wooden pins, as it shrinks from nails.

b. The wood is said to yield an oil, which is famous for preserving books and writings.

Culture, &c. of the Red Cedar.

1. INCREASED.

a. By seed—If sown as soon as ripe, they will often come up the following spring; though sometimes a few will lie a year or two in the ground.

2. TREE.

a. The young trees should remain two years in the seed beds, and then transplanted, either into nurseries, or where they are to remain.

b. The seedling trees should be protected from frost, by laying mulch on their roots; and the growing trees moderately pruned, to make them aspire in height.

c. Bears our severest winter.

d. This is a native of N. America, from which country we have other kinds of cedars, whose culture is the same as the above.

e. The wood is brittle, and so not fit for stubborn uses—It is not eaten by worms.

3. USE.

a. In England the wood is used in making black lead pencils—In America ships are built with it, and it is used in wainscoting houses, and for making many sorts of utensils.

CELERIAC.

Culture, &c.

1. SEED.

- a.* Sown about the end of March or early in April, upon a rich border; and in dry weather constantly watered, otherwise the seeds will not grow.

2. PLANT.

- a.* When large enough, to be planted in rows 18 inches asunder, and the plants 6 or 8 inches apart, either on level ground, or in very shallow drills.
- b.* The plants to be only once earthed, and that when the roots are nearly grown to their full size.

3. USE.

- a.* The part which is eaten is the root, which grows often as large as ordinary turneps; it is cut into slices, and soaked a few hours in vinegar, by which simple preparation, it becomes as mellow as a pine-apple, and affords a delicious, and very nourishing repast—By some this plant is called Turnep-rooted Celery.

CELERY.

1. Italian or common C.
2. Solid Stalk C.
3. Great upright C.
4. Curled leaved C.

Culture, &c.

1. SOIL.

- a.* A deep, rich, dry and light mould—Trenches are to be dug a moderate spade deep, a foot broad, and $3\frac{1}{2}$ feet apart; the earth taken out, to be spread even on the space between: lastly, some good rotten dung to be laid at the bottom, and dug in.

2. SEED.

- a.* Sown from the middle of February till the second week of May.
- b.* Sown broad-cast either before the earth is raked; or afterwards, and mould sifted over it to the depth of an inch.
- c.* The early-sown may be forwarded on a moderate hot-bed; and the late should be screened from the sun from 10 to 3 o'clock, and occasionally watered.

3. PLANT.

- a.* When a month or five weeks old, to be planted in nursery beds, 3 feet wide; the plants 3 inches apart, and in rows of 5 or 6 inches width—Here to remain for about six weeks.
- b.* To be planted in the middle of the trenches, about 5 inches apart; and occasionally watered till they have taken root; and earthed from the top of the space between, as they advance in growth.
- c.* The tops of the leaves should be cut off, and the roots trimmed, before planting; and a double row of lettuces may be planted between the trenches.
- d.* When severe frosty weather sets in, cover some of the best plants with long litter; this will protect them, and prevent the ground being frozen; by which means they may be taken up without difficulty, when wanted: or, they may be kept for use, laid in sand or earth, or covered with long litter; either under a shed, or in a dry cellar.

4. USE.

- a.* This is a favourite vegetable with most people.

CHAFF.

This word properly signifies the *husks of corn*; but is used by farmers for any kind of *straw cut* into short pieces, thus resembling chaff: its use is to make a small quantity of oats, or other corn, go much further in feeding cattle, than corn alone will; by being mixed with it.

1. The engines for cutting it are,

- a.* The old one, still used by many: the knife works like a saw, and with it one man will cut 60 bushels per day.
- b.* The late invented chaff-cutters have 1, 2, or 3 blades fixed to the spokes of a perpendicular iron wheel, which is turned round by a handle. One invented by Mr. Harmand with 3 blades, cuts a bushel in a minute.

112 lb. of *straw* gives 18 bushels of chaff, and 112 lb. of *hay* 17 bushels.

CHAMOMILE. (*Anthemis Nobilis.*)

Culture, &c.

1. PLANT.

- a.* The culture of this plant, is, planting partings of the roots in the spring, about a foot asunder.

Is *much cultivated* (even in fields) about Chesterfield, on a light sandy soil.

b. The flowers should be gathered on a dry day, spread to dry in a shady place, then put up in paper bags.

2. USE.

a. Medicinally.

The herb people generally sell a variety with double flowers, which are much larger, but not so strong as the single.

b. A favourite food of *sheep*.

It is easy to judge what plants are most agreeable to different animals, by observing which are those that they prefer on being turned into a fresh pasture; or what are the plants in common pastures; which the creatures feeding there, never suffer to rise to feed.

CHEESE.

METHOD OF MAKING, &c.

1. STILTON CHEESE.

Take the night's cream and put it to the morning's new milk, with the rennet; when the curd is come, it is not to be broken, as is done with other cheese, but take it out with a foil-dish altogether, and place it in a sieve to drain gradually; and, as it drains, keep gradually pressing it till it becomes firm and dry; then place it in a wooden hoop; afterwards to be kept on dry boards, turned frequently, with cloth binders round it, which are to tighten as occasion requires.

The cheese, after being taken out of the hoop, is to be bound tight with a cloth, which cloth must be changed every day, until the cheese becomes firm enough to support itself; after the cloth is taken off, they are to be rubbed every day all over for two or three months, with a brush; and if the weather is damp or moist, twice a day; and even before the cloth is taken off, the top and bottom are to be well rubbed every day.

2. GLOUCESTER CHEESE.

Is made with milk immediately from the cow, but which in summer is deemed too hot, and is lowered to the desired degree of heat before the rennet be added, by the addition of skim milk, or if that will not do,

water is added. When the curd is come, it is broken with a double cheese knife, and with the hand, to free it from the whey which is laded off. The curd being thus freed from the principal part of the whey, but not yet from the whole of it, it is put into naked vats, and the vat set in the press for 10 or 15 minutes, to free it the more effectually from the remaining whey: it is then turned out of the vats into the cheese tubs again; broken small and scalded with water lowered with whey, about three parts water to one part whey; the quantity, a pailful, thrown upon the crumbled curd; and the whole stirred briskly about, mixing the curd and the scalding liquor evenly together. Having stood a few minutes for the curd to subside, the liquor is laded off; the curd collected and vatted: when the vat is half full, a little salt, about an ounce, is scattered over the surface, and worked in among the curd; the vat filled up, and the mass turned two or three times in the vat; the edges being pared and the middle rounded up each turning. At length it is turned into a cloth, and placed in the press, and carried from thence to the shelves, where they are turned generally once a day, till they attain a sufficient degree of texture to enable them to undergo the operation of washing. See, *ante*, pa. 13. & 14.

3. WILTSHIRE CHEESE.

The milk is run as it comes from the cow, or as it happens to be lowered by the little skim milk which is put into it. The curd is first broke with the hand and dish: in some dairies great caution is observed in the first fracture of the curd, so as to let out the whey leisurely, to prevent its carrying off with it the "fat" of the caul. For thin cheese it is not broken so fine as curd is in Gloucestershire; for thick cheese, still finer; and for loaves, it is reduced, as it were, to atoms. The whey is laded off as it rises, and the curd pressed down; the mass of curd is then pared down slice after slice (about an inch thick) three or four times over, to free it wholly from the whey, and also pressed—the method of scalding is similar to that for Gloucester cheese—this being laded off, the curd is, in some dairies, rebroke and salted in the *cowl*; while in others, the curd is taken warm out of the liquor,

and salted in the vat: thin cheeses, with a small handful, in one layer—thick ones, with two small handfuls, in two layers—loaves, with two handfuls, in three or four layers;—spreading and rubbing in the salt evenly among the curd. The cheeses are generally salted twice in the press, where they remain in proportion to their thickness; thin cheeses, three or four meals; thick, four or five; and loaves, five or six. See, *ante*, pa. 14.

4. CHESHIRE CHEESE.

The evening milk (of suppose 20 cows) having stood all night, the cheese-maker (in summer) about six in the morning, skims off the cream, observing first to take off all the froth and bubbles; about three-fourths of a brass panful (3 or 4 gallons) is placed in a furnace of hot water in the pan, and made scalding hot; half of this is poured into the cheese tub, and the other half poured to the cream in another brass pan: before this is done, several bowls full, or perhaps the whole morning's milk, is poured into the cheese tub, care being taken to skim off all air bubbles. The rennet being added, the whole is well stirred: and a wooden cover is put over the tub, and over that is thrown a linen cloth; if the cream rises to the surface, the whole must be stirred; and if the curd does not come, in about an hour and a half, hot water or hot milk may be poured into it, or hot water in a pan partially immersed therein: but this must be done before it is at all coagulated—The curd, before it is broken by the hand, is first cut to the depth of a knife blade, at the distance of about an inch, and again crosswise at right angles to let out the whey: if the curd is tender, instead of a knife, recourse is had to the edge of a skimming dish, and the curd cut gently an inch or two, and turned over till the whole surface is thus turned. The curd being wholly freed from the whey by pressing, and laded off; the curd is then cut into nearly three equal parts, one of which is taken into a brass pan, and broke very fine; but as soon as it is coarsely broken, a large handful of salt is added: when sufficiently broken, it is put into a cheese vat, and the second and third portions are treated in the same manner, and emptied into the vat, except, that into the middle portion, is added eight, nine, or ten times the

quantity of salt, though some give each portion three large handfuls. The curd being put into the vat, heaped in a conical form, the corners of the cloth are turned over it, to prevent its crumbling down, and the curd pressed in with the hands; when it adheres, a square board, with a corner of the cloth under it, is put on the top, with a 60lb. weight on it (some use a lever to press it) when the whey does but drop the weight is removed, and the curd broken half way; the weight is then replaced as long as any whey drops. The vat is then drawn from the cheese, rinsed in whey, and another cloth being added, the cheese is replaced, and the whole whey pressed out, when the cheese is turned out of the vat, which is rinsed as before. It is now wrapped in a finer and larger cloth, which is so placed, that on one side it shall be level with the edge of the vat, and the other wrapped over the whole surface, and the edge put within the vat; as the cheese is still too high recourse is had to a tin binder or hoop, about 3 inches broad; the cheese is then put into the press. When the cheese is first taken out of the press, it is the custom in some places to put it naked into hot or warm whey for an hour or more: it is then taken out, wiped dry, and when cool, returned to the press—This is done to harden its coat, and make it stand the better. In the salting house it is placed nearly mid deep in brine; the upper surface of the cheese being covered all over with salt, for about three days; being daily turned, and the cloth twice changed; the cheese is now bound with a hoop, placed on a bench, salted and turned for eight days, at the end washed in lukewarm water; when dried with a cloth, it is put on a bench for seven days, washed again in warm water with a brush, wiped dry, smeared with 2 oz. of sweet whey butter, and placed in the warmest part of the cheese room. See, *ante*, pa. 13.

5. COTTENHAM CHEESE.

The superiority of it is not ascribed to any particular mode in the management of the dairies, but solely to the nature of the herbage on the commons.

6. HUNG CHEESE.

This is made in Dumbartonshire, and is called *hung* when the curds are tied up in a cloth or net, and, to get

quit of the whey, are hung up, instead of being put under the press.

This kind of cheese is thought to be richer, or fatter, than had the curds been treated in the ordinary manner; because the whey is not forcibly drawn off, but allowed to drop at leisure.

7. SKIM CHEESE.

The curd is broken up in the whey; the whey, when the curd has subsided, laded off; the remainder, with the curd, thrown into a coarse strainer; and having lain abroad in this (spread over a large tray, with a hole in the corner, to let out the whey which drains through the cloth) until quite cool, the corners and loose part of the strainer are gathered together in the hand, the curd squeezed as hard as the hands can press it. The curd in the strainer is then put into a vat, and set in the press for a few minutes to discharge the remaining whey more effectually. The whey having done running, the curd is taken out of the press and rebroken, as finely as possible, salted, and returned to the press.

In large dairies a mill is used to break the curd.

8. Cheese, made of goats milk, is much valued in some of our mountainous counties, when kept to a proper age; but has a peculiar taste and flavor.

9. In Cardiganshire ewe's milk is added to the cheese, to give it a tartness, which the country people prefer to the milder sort—In Scotland both cheese and butter are made from ewe's milk only.

10. There is an instance in *Giraldus Cambrensis*, of a Countess of Chester, who kept milch hinds, and made cheese of their milk; some of which, she presented to Archbishop *Baldwin*, in his itineracy through *Wales*, in the year 1188.

It may be proper to add one general remark on cheese, viz. That there are few countries which are famous for *bad cheese*, where the reason may not be traced much oftener to a fundamental fault in the process of making, and, particularly, in that essential article the rennet, than to any particular local fault of the soil or situation, or even to want of care and attention in the dairy-woman. See pa. 52. & 53.

CHERRY.

1. Wild black C.
2. Coroun or large black C.
3. Red C.—These three are varieties of the Bird Cherry (*Prunus Padus*) improved by culture, and are admired by many for their peculiar bitterish taste—The Coroun is superior to the other two for general culture.
4. Flemish or early Kentish, ripe the end of June.
5. Hertfordshire heart C. July and August.
6. Black heart C. end of June, and in July.
7. White heart C. June and July.

All the above are cultivated in the orchard manner in Kent, and from No. 4 to the end of this list, in Gardens, as standards, wall, and espalier trees. These are varieties of the *P. Cerasus*.

8. Early May C. (Small) May and beginning of June.
9. May Duke C. end of May.
10. Amber heart C. July and August.
11. Bleeding heart C. middle or end of July.
12. Carnation C. end of July.
13. Crown heart, July.

Most of the heart C. being strong growers, generally bear more sparingly than the others.

14. Morello C. August and September—This is commonly assigned to a northern aspect, though it highly deserves a southerly exposition. The other sorts ripen their fruit early or late, according as they are planted against a S. W. E. or N. walls; forming thereby a succession of crops from May till September.

Culture, &c.

1. SOIL.

- a. Succeeds in any common soil.

2. INCREASED.

- a. By the stones, sown in autumn, 2 inches deep.
- b. By cleft-grafting in the spring, and by budding from the middle of July to the middle of August.

For small dwarfs for pots, the Bird-Cherry is the proper stock; but for standards, &c. the Wild Cherry is the best, being a hardier, and stronger grower, than those raised from the best fruit.

3. TREE.

- a. Planted as wall fruit, from November till March, at a distance of 15 or 20 feet—Broken parts of the roots to be previously cut away, and any ill shaped shoots of the head.
- b. When planted like an orchard, the distance between the trees is from 20 to 30 feet; and are put in the earth somewhat deeper than apple-trees.
- c. The best method of raising cherry and apple trees, is planting them among hops, by which means they very soon come to perfection: the proportion (in Kent) to an acre, 300 hop hills, 200 filberts, and 40 cherry and apple trees. The hops stand about 12 years, and the filberts about 30, by which time the cherries and apples require the whole land.
- d. Planted in alternate rows with apples, and two rows of filberts between each.
- e. Pruning.
 - (1.) Summer P. to be performed in May or June, and consists in displacing all useless growths of the year, as fore-right shoots, &c.
 - (2.) Winter; cut out worn or dead wood, and train in last summer's shoots to fill up vacancies, cutting out all supernumerary ones—the branches to be trained mostly at full lengths, and 4 or 5 inches asunder.
- f. Bears fruit on spurs.
- g. A composition of lime and night-soil, painted on the stems of young cherry-trees with a brush, is said, to promote the growth of them exceedingly.—It has the same effect on apple trees.

4. USE.

- a. The Fruit.
- b. The wood is hard and tough; and is used by the turner; and by him formed into chairs, and stained to imitate mahogany.
- c. The gum that exudes from this tree is equal to gum Arabic.
- d. The leaves an excellent article of food for fattening hogs. "Cattle have it is said, been killed by eating leaves of *the wild cherry-tree*."

Cherry-trees, according to *Pliny*, were not known in Europe, before the battle which *Lucullus* fought

with *Mithridates*, and it was 100 years longer before they passed into England.

They were brought to *Italy* from *Cerasonte* in *Asia*.

CHESNUT. (*Fagus Castanea*.)

Culture, &c.

1. SOIL.

- a. Flourishes on poor gravelly and sandy soils, and also on loams.
- b. Is a certain and quick grower, in every kind of soil; except heavy clays, or soils generally wet, where it makes very indifferent progress.
- c. The land should be trenched to a depth from 15 to 18 inches: by this process, the upper, which is usually the best soil, is subverted, to the great advantage of the roots; and the under-soil brought up to the beneficial influence of the atmosphere.

2. INCREASED.

- a. From nuts dibbled in February, 3 or 4 inches deep, having been preserved during winter in sand. The quantity to an acre 4 bushels.
- b. By grafting; this is a more certain way of continuing a good kind, than by nuts.

3. TREE.

- a. Grows quick, tall and straight; the wood excellent, much resembling oak, both in colour and quality.

Said to excel oak in two points, viz. that it grows faster, and that the sap part of the timber is firmer, and less corruptible. It is however allowed, that chesnut-trees of a large size, or great age, are generally observed to be greatly shaken.

- b. Cut for hop poles at 18 or 20 year's growth—The most lasting of woods for this purpose, continuing in use for near 30 years.
- c. Makes an excellent underwood; the shoots from the stubs being numerous and very luxuriant.
- d. Trees intended for fruit should be raised in nurseries, be removed at least three times, and have the tap-root cut off.
- e. One growing at Tortworth, in Gloucestershire, is 52 feet round, and supposed to be near 1000 years old.

In a warmer climate it attains to a much larger size, if not a greater age: for we have an account of one, in the travels of a Swede, through Italy, (translated by the late G. R. Foster) being 144 feet 6 inches in girth.—Brought, according to *Pliny*, into *Italy* from *Lydia* its native place.

f. Nothing will thrive under its shade.

4. USE.

a. Timber for building; and for hop poles; also for hurdles, stiles and gates; some of the latter have been known to last for 20 years.

The wood may be stained to look equal to mahogany, by rubbing it over first with allum-water, then laying on, with a brush, a decoction of log wood chips, and lastly a decoction of Brazil wood.

b. It is the best of woods for sea-wallings, or embankments against the sea. If the soil is sandy, the piles will not last so long, as in a cohesive ooze.

c. The nuts, which are agreeable to most people, are also used for whitening linen cloth, and for making starch.

In Italy, the inhabitants dry, grind, and knead them into a paste, and use it in lieu of bread. In Portugal, horses are fed with them, which are found to fatten them very quickly, although it does not inspire them with so much life and vigour as oats or barley.

d. The English nuts are well tasted, but do not reach in size, those brought from Spain and Portugal. In England, chefnuts are eaten, either raw or roasted; in Spain they are boiled.

e. The bark is sometimes used for the purposes of tanning; but it is greatly inferior to that of oak, selling for only half its price.

The ashes of Chefnut wood are said to be useless in lye for washing, as they damage, and even spoil the linen.

CICHORY. (*Cichorium Intybus*.)

Culture, &c.

1. SOIL.

a. Will thrive on most soils.

2. SEED.

a. 10lbs. per acre.

The seed was first introduced by Mr. Young, who obtained it in France.

b. Sown with spring corn, either with or without clover or other grasses.

3. PLANT.

a. Is a native plant.

b. Has been cut three times in the season—first time about the 20th of May.

4. USE.

a. Given as foil to horses when hard worked without either hay or corn.

b. With sheep and pigs it is supposed to succeed even better than with larger cattle.

c. The Swedes, in time of scarcity, make a substitute for bread from the roots.

CINQUEFOIL. (*Potentilla Reptans.*)

Culture, &c.

1. SOIL.

a. A light land.

2. SEED.

a. Five bushels sown per acre.

3. PLANT.

a. Lies six years, and in that time gets three hand-dressings of cinder ashes, at the rate of 50 bushels per acre—This crop is annually mown.

This plant is known to some people by the name of *five-leaved grass*.

4. USE.

a. For feeding cattle.

b. A fine grained calf-leather has been prepared from it.

" CION.

" A slip, or young tree."

CIVES. (*Allium Schanoprasum.*)

Culture, &c.

1. SOIL.

a. A light, rich ground, and shade.

2. INCREASED.

- a. By parting the roots, either in the spring or autumn, observing to plant them about 8 inches distant.

3. USE.

- a. The leaves in winter and spring fallads.

This is a *kind of Onion* which never produces any bulbs, and seldom grows above 6 inches high in the blade, which is very slender, and collected in bundles.

CLEFT-GRAFTING.

Is performed as follows: first, with a saw cut off the head of the stock in a smooth place, at 5, or 5 feet 6 inches from the ground, pare it very smooth; then with a strong knife and mallet, cleave the stock $1\frac{1}{2}$ inch down, a little on one side the heart of the stock; draw out the knife and put a wedge, driving it easy into the slit at the top to keep it a little open. Then with a knife made for that purpose only, open the slit about $1\frac{1}{2}$ inch long, half an inch wide on the rind, bringing it to a feather-edge near the heart, and to a point at the bottom of the slit. You must now have your graft or scion ready, which must be cut with a keen knife very smooth to fit, and place it in the cleft, so that the rind of the graft may exactly meet the rind of the stock. If the stock be large enough, you may put another graft on the other side; when rightly placed, draw out the wedge at top, taking care not to displace the grafts, and the stock will close in and hold fast the grafts, when you must have some smooth clay, mixed with fine hay, made into pledgets, and wind round the graft and stock, making it smooth on the outside; this will keep the wet and air out of the crown of the stock, and the sun from exhausting the sap. See Grafting.

CLOVER.

1. Common Clover. (*Trifolium Pratense.*)
2. Red Perennial Clover, or Cow-grass. (*Trifolium Alpestre. Medium?*)

Cow-grass appears to be longer in the stalk, more branching and crooked than the common Clover;

it is later in arriving at its full growth, and the blossom is larger, and of a deeper purple; the leaves are longer, darker, and narrower; and the whole plant is larger and heavier: the root is perennial.

3. Hop Clover. (*Trifolium Agrarium.*)

4. Dutch Clover. (*Trifolium Hybridum.*)

This is supposed to have been first produced by the dust of the common Clover, fertilizing the seed-bud of the white Clover.

5. White Clover. (*Trifolium Repens.*)

6. Russian Clover—Flowers white, calix red; leaves oval, purple, with a green edge.

7. Scarlet flowered Clover.

Culture, &c. of Common Clover.

1. SOIL.

a. Thrives best on a firm weighty soil.

2. SEED.

a. Sown alone from February till May, in Scotland as late as July, 10lb. to 14lb. per acre.

If often sown on the same land, it becomes tired of it, and the crop fails; should therefore be changed for trefoil or lucerne.

b. Sown with wheat in the spring, at the same time, and in the usual quantities as with spring corn.

The reason assigned for this practice is, that in a dry season the clover is very apt to overpower the oats or barley; and on the other hand, when to prevent the evil, the clover is sown late in the season, it frequently misses plant, and the clover crop is lost for that season.

c. Sown and harrowed in with barley.

Sown when the barley is three inches high, and rolled well in.

Sown with barley along with other seeds, in the following proportion, viz. 12lb. of common clover, 4lb. of white clover, 2lb. of rib-grass, and 1 bushel of ray-grass per acre.

d. Sown with oats from 7lb. to 16lb. per acre; the same with barley.

Different soils require a greater or less quantity of seed, a poor one the most.

e. Mixed with ray-grass.

Thus mixed they are frequently mown, when the ray-grass begins to flower, which not only increases the bottom grass, but a great quantity of excellent hay is obtained. The ray-grass prevents the frost hurting the clover.

f. If intended to continue only one year, it is sown alone ; but if three or more in grass, it is mixed with other grass seed, in the following proportion, viz. 8lb. of common clover, 4lb. of white clover, 1 bushel of ray-grass, to which is added, 2lb. or 3lb. of rib-grass, or yellow clover, per acre, as best suits the soil.

It is objected to sowing clover on land laid down for pasture, that it only lasts two years, and when it wears out, it leaves bare spaces on which grows weeds.

g. The seed is ripe, when the stalks and heads change brown ; the best seed got by not feeding.

Winlaw's mill, on a small scale, can be used to clean out the seed of clover ; the flowers being first threshed off from the stems ; will clean as much in three hours, as a man can perform in a week. It answers also for flax-seed, canary, or any other small seed.

In America they make use of two very simple implements to collect the head—see the plate fig. 11—the dimensions are as follow, 1, 2, the shafts, 4 feet 4 long and 3 feet asunder—3, 4, the hands, 3 feet long and 20 inches apart—5, the teeth, 13 inches long—the wheels are 16 inches in diameter. This machine is drawn by one horse, and guided by a man or a boy : it simply consists of an open box, about 4 feet square at the bottom, and about 3 in height, on 3 sides ; to the fore part, which is open, teeth are fixed, similar to those of a cradle, about 3 feet in length, and so near as to break off the heads from the clover-stocks between them, which are thrown back into the box as the horse advances : the box is fixed on an axle tree, supported by two small wheels, 2 feet in diameter ; two handles are affixed to the hinder part,

by means of which the driver, while he manages the horses, raises or lowers the teeth of the machine, so as to take off the heads of the grass; and, as often as the box is filled with them, they are thrown out, and the horse goes on as before. Fig. 12, is called a *cradle*, and is made of an oak board about 18 inches in length and 10 in breadth; the fore-part of it, to the length of 9 inches, is sawed into teeth; a handle is inserted behind, inclining towards them, and a cloth put round the back-part of the board, which is cut somewhat circular, and raised on the handle; this collects the heads or tops, and prevents them from scattering, as they are struck off from the cradle, which may be made of different sizes; being smaller in proportion for women and children.

3. PLANT.

- a. Put up for hay or seed in May or June.
- b. Clover and Lucerne hay is saved in *wet seasons* in the north of England, by a practice called *Tippling*: which is to roll the grass up immediately after the scythe, into bundles or *Tipples*, of the size of a small barley sheaf; then draw out a band from one side (leaving it united), twist as drawn out, and tie it firm round: The tipple being placed betwixt the knees, that part above the band is drawn through the hands with a twist, and the longest grasses drawn out so far as to tie in a knot, which finishes the point of the cone, and forms the *Tipple*. The advantages are evident, as *the rain is carried off* similar to the thatch of a house, and *the sun and wind have such access as to prevent fermentation*. (See plate, fig. 2.)
- c. In Scotland, when clover is made into hay, it is put into ricks, containing from 40 to 60 stone weight,* in two or three days after it is cut; in about two or three weeks after, it is collected into long stacks,† containing sometimes 10,000 stone. These are very rarely hurt by heating, and there is no example of their taking fire.

4. USE.

- a. For feeding cattle, sheep, and pigs.

* 70 lbs. The stone 14 lbs. † " Ricks."

If care is not taken, cattle will eat so greedily as to be choaked, or hoked as it is called—To prevent it, keep them when turned in, constantly moving, that the first ball may sink into their maw before the next follows. It is said, that cattle turned into it belly-deep are not injured by it, and that it is only injurious in a younger state.

b. Clover hay preferred to white hay for draught horses in towns; and as foil, acts both as food and physic, and enables them to stand their work.

c. Cut into chaff.

d. The flowering heads are used to dye woollen cloths green; with allum they give a light, with copperas a dark green.

The first clover seed was brought by Sir R. Weston from Brabant or Flanders, about 1645, and sown in Surry; and clover hay some years after, reduced the price of meadow hay, from £3. to £1. *per* load.

Culture, &c. of Red Perennial Clover, or Marle Grass.

1. SOIL.

a. A loamy soil suits it best.

b. Grows spontaneously on marle land.

c. Delights in a clayey soil.

2. SEED.

a. Common clover frequently sold in the seed shops for it.

b. Ten, by some 12lbs. of seed per acre, with spring corn.

The seeds were first collected about 50 or 60 years ago, by a Mr. James, who lived in the parish of Chilcompton, Somersetshire.*

3. USE.

a. Is considered a valuable substitute for Common Clover, as it continues much longer in the land, and bears dry weather better.

Sheep prefer the common clover to it.

* "It may be well for the husbandman to attend to the plants of Red Clover in the course of its growing: Some considerable variety appears in the character of the plants: He should note them, and sow the seeds of a head of each variety, observing the progress of the growth, hardiness, &c. It is the way of discovering the good sorts,—the best: The worst the field had better be cleared of."

Culture, &c. of Hop Clover.

1. SEED.

- a. Sown in drills 1 foot apart.
- b. The seed best sown in its black hull.

2. USE.

- a. Mixed with common clover it makes incomparable good fodder, on light land.
- b. Cut green for horses; sown for feeding sheep—Does not grow high enough for hay.

This plant is called, in some places, Black-Grass; and in others, Nonsuch.

Lasts four or five years. " Little known in *America*."

Culture, &c. of Dutch Clover, or Honey-suckle Grass.

1. SOIL.

- a. Loves a moist soil, rather strong than very light.

2. SEED.

- a. About 8 lbs. sown per acre in March or April.

Much of the seed was imported from Flanders, before it was much cultivated here by farmers; though it is a native of Britain and Ireland.

3. PLANT.

- a. Never wears out by being close fed.

4. USE.

- a. Makes an extraordinary sweet pasture, agreeable to all sorts of cattle; and will maintain, summer and winter, more sheep, than five times the same extent of the best sheep downs.—Swine will fatten on it.
- b. The leaves are a good rustic hydrometer, as they are always relaxed and flaccid in dry weather, but erect in moist or rainy.

Culture, &c. of the White Clover.

1. SOIL.

- a. Light land.

Frequent rolling makes it flourish abundantly.

2. SEED.

- a. Sown with red clover, rib-grass,† nonsuch, ray-grass, and barley.

† " Both native and imported rib-grass appears to be a real weed, so little was it ever eaten separately from other plants. The plants of the imported are equally untouched as the native by cattle."

3. USE.

- a. Yields the sweetest hay on dry land mixed with non-such and ray-grass.
- b. The dried powdered flowers of this clover were eaten by the Irish (being made into bread) before the introduction of potatoes, and were reckoned very nourishing. They call it Shamrock. They also used for the same purpose, the flowers of the Common Clover.†

Bears being over-flowed, which the common clover will not.

This clover appears to be often confounded with the Dutch Clover.

In a catalogue of the plants in a garden of John Blackburne, Esq. at Orford, in Lancashire; we have a variety of the White Clover, called Purple-grass; probably the same with the Russian Clover, which is a creeping plant; it also does not grow high, but will spread near 3 feet square, and when the leaves are green, as is sometimes the case, a white mark is visible in them. "The white Clover of *America* is a rich grass; grows close, though rather too short for cutting into hay."

COLEWORT.

A name given by gardeners to a cabbage plant, to be cut for use from the time the leaves are as broad as a man's hand, till it begins to form a close head. They are generally raised from seeds of any of the best kinds of heading white cabbage; but those of the sugar-loaf are preferable to all others for eating.

Culture, &c.

1. SEED.

- a. Sown early in July for autumn and winter use.
- b. Sown the beginning of August for spring use.

Such of these as are not wanted, if they do not shew a tendency to run up to seed, will cabbage at a very early time.

† "Yields the finest honey in great quantities. The red or Dutch clover you will scarcely ever see a Bee amongst, whilst the white clover fields are alive with them in *America*."

2. PLANT.

- a. When six or seven weeks old, to be planted in rows 1 foot asunder; and 6 or 8 inches between the plants.

3. USE.

- a. The same as the cabbage.

SEA COLEWORT. (*Crambe Maritima*.)

Culture, &c.

1. SOIL.

- a. A sandy or gravelly soil.

2. SEED.

- a. To be sown soon after it is ripe.

3. PLANT.

- a. At Michaelmas should be covered with sand or gravel, about 4 or 5 inches thick, which should be repeated every autumn, in the manner practised in earthing of asparagus beds.

- b. Not fit to cut for use till it has had one year's growth.

- c. The young shoots before they break the ground, are the part eatable; the green above ground being tough, bitter, and occasions giddiness.

This plant grows naturally on the sea shore, below high-water mark; when it is observed to thrust up the gravel, the people cut it.

- d. The gardeners trim it for sale like Celery.

4. USE.

- a. Is eaten boiled as a great delicacy.

Was first introduced into the London markets by the late Mr. Curtis, in 1795.*

CORIANDER. (*Coriandrum Sativum*.)

Culture, &c.

1. SEED.

- a. Sown in March 14lb. to an acre.

- b. Sown with Carraway.

It requires great care in hoeing to distinguish the

* "It must be a very recent plant in its introduction into the London market, seems a great curiosity, and a good plant for the table, producing plentifully. It is not necessary that the seed should be sown and cultivated on the sea-shore, as might seem from the import of its name."

plants. The Carraway is not regularly set out for a crop till the Coriander is harvested, at which time it must be hoed.

c. Sown with Carroway and Teasel.

As neither the Carraway or Teasel come completely and regularly the second year, both crops are usually allowed to stand for the third summer.

2. PLANT.

a. When sown alone, the plants are set out to 4 inches.

3. USE.

a. The seeds are used in medicine, and by the confectioner.

b. Formerly it was cultivated in gardens as a salad herb.

CORK-TREE. (*Quercus Suber.*)

Culture, &c.

1. INCREASED.

a. By acorns, sown in beds—The plants to remain in a nursery three or four years, and then planted where they are to remain.

2. TREE.

a. Grows to nearly the size of an oak in *Devonshire*.
" So will it then grow in the United States."

b. The trees must be barked at ten and at twenty years old, though the bark is then porous and good for little; at the third peeling the bark will be in perfection, and will continue so for many years, for the best cork is taken from old trees.

c. The number of years between the stripping of old trees, depends on the climate in which they grow; in the north of Spain they peel them but about once in seven or eight years; but in the southern parts every fifth year.

d. The time of the year July; and it is performed with an instrument, like that used for disbarking oaks.

3. USE.

a. The use of the bark is too well known, to be mentioned here—Burnt, it makes that kind of light colour called Spanish black.

- b.* The acorns are in greater estimation than those of the common oak, for fattening swine.*

CORNEL.

1. *Male* Cornel or Cornelian Cherry. (*Cornus Mascula.*)
2. *Female* Cornel or Dogberry-tree. (*Cornus Sanguinea.*)

Culture, &c. of the Male Cornel.

1. INCREASED.

- a.* By seed: which should be sown in autumn; otherwise they will lie a year in the ground.
- b.* By suckers, and by laying down of the branches.

The Female Cornel may be increased by the same methods.

2. TREE.

- a.* Is a *foreign tree*, that bears our climate, flowering the beginning of February; (in England.)

3. USE.

- a.* The fruit preserved to make tarts.

There are two varieties, which differ in the colour of their fruit; the red is the most common.

Culture, &c. of the Female Cornel.

1. TREE.

- a.* Grows *wild* in our woods and hedges.

2. USE.

- a.* The wood being hard and smooth, is fit for the turner, and is used in wheel-works.
- b.* The *berries* dye purple; and are also preserved as a *pickle*—From one bushel of the kernels, 16 lbs. of lamp oil were obtained by expression.
- c.* An oil has been extracted from this tree, which it appears may be of use to the arts, and perhaps to medicine. "Why has it not continued to yield oil?"

* "The tree which gives cork from its bark is a perfect real oak, possessing that peculiar quality; and America claims to nourish and perfect all the oaks: It will one day have, introduced from Europe, plants, and also seeds of it, by some thoughtful traveller or ship-owner; from whence this branch of the oak family may be propagated throughout America—an essentially useful branch!"

CORN-SALLET. (*Valeriana Locusta.*)*Culture, &c.*

1. PLANT.

- a. The cultivation of this plant is simply sowing the seed, the latter end of August; thinning the plants where too close; and keeping them clear of weeds.—Grows wild in corn-fields. "In gardens it spreads, and sows itself."

2. USE.

- a. As an *early fallet* plant.

COW.

1. A good cow for milk is described as having a thin head and neck; clean chaps, and free from leather; deep and rather flat carcase, wide hips, the bones, perhaps, inclining to be pointed; capacious udder, and large plain milk-veins: the two last signs worth all the rest.
2. A cow is in her prime for milk, at five years old; but none should be turned from the dairy, whilst they milk largely.

The cow-keepers near London, buy cows when three years old, and with calf; and keep them from four to seven years, according to their goodness. In Wiltshire they keep them till they are fourteen or fifteen years old.

3: *Quantity of milk*, and times of milking:

- a. Near London, where the *Holderness* breed is mostly kept, being esteemed the best milkers;* " (they give most of a thin milk; or water-milk)" the quantity varies, according to the season and kind of food: as
- (1.) Nine quarts a day from October to May—fed on turneps, grains, hay, or rowen.†
 - (2.) Ten quarts from May to September—food, grass and occasionally grains.†

* " So esteemed by those who can scarcely be called Farmers and Dairy-people; but are cow-feeders or milk-sellers;—the quality of the milk being nothing to them as to making butter and cheese; being used at the table or in the kitchen."

† " All roots and juicy food, as wash and drank; and of drank any quantity can be made."

† " Or drank; which can be made to abound on a farm or dairy-farm."

(3.) Eight quarts—fed on grains and hay.

b. In Staffordshire, the long-horned breed, give from eight to twelve quarts (in some instances more) a meal, and two meals a day.

This is to be understood of the prime season, viz. May and June ; for they decline afterwards to three-fourths, one-half, and one-fourth of that quantity.

c. *Alderney cows* are great milkers, in proportion to their weight ; " and the milk is rich."

d. Norfolk cows, which are of the *polled* or *hornless* kind, are extraordinary milkers ; there is hardly a large dairy that does not contain cows which give, in the height of the season, *i. e.* the beginning of July, *eight gallons of milk in the day* ; and six are common among many, for a large part of the season.

It is observed, that when the quantity of milk in any breed is very great, that of butter is rarely equal. " the quantity great—the quality thin."

e. The *time of milking* varies in different places—Near London, for the convenience of milk-dealers, *from four to half-past six* o'clock in the morning, and *from half past one* in the afternoon till near *three*—In *Cheshire during summer, at six o'clock*, both *night and morning*—In some parts of Scotland, three times a day.

It is said, that if a cow be *milked three times a day*, she will yield a greater quantity, and as good, if not better milk, than by drawing her teats only twice, namely, in the morning and evening.

4. *Quantity of cheese* made from one cow.

a. In North Wiltshire, from the long horned breed, sometimes as high as $4\frac{1}{2}$ cwt. or near 500 cwt.

b. In Cheshire (where they have no particular breed) the quantity it is supposed, may be stated at 300lbs. from each cow, the dairy through ; including such as cast their calves, and bad milkers—The quantity varies from 50lbs. to 500lbs. and upwards, from each cow on the same farm.

5. *Quantity of butter* from one cow's milk per week.

a. In Essex, 6lbs. in the prime season, 4lbs. at other times—No particular breed.

"A *Chinese cow*, now in England gives milk so very rich, that one pint of it gives as much butter, 4 ounces, as 7 pints of a *Sussex cow's* milk, both churned immediately from the cows without being set for cream. The *Chinese cow* is small, and says Mr. Young, the beef is superior in fatness, and in butter the superiority is as 1400 lbs. to 200 lbs. from a very good country cow. This is such a superiority in milk and beef, as might make it an object to the owners of *American ships to China*, to import some breeding cows from thence with calf."

6. It is generally admitted, that cows bred upon the land, answer best; for when a purchased cow happens to have been bred upon poorer land than what she is brought to, it is generally not till the second year, at the earliest, that she comes to her full milk.
7. In *Essex*, two acres of prime pasture are usually allowed, for the consumption of a milch cow.
8. A cow goes with young nine months, and from a few days to a fortnight over: generally produces only one calf; at most two, in which case the females (called free-martins) are barren, and usually are worked with oxen.
9. Young stock, unless almost starved by short pasturage, run fat, and never stand the bull.
10. Cows are liable to slip calf, which is generally ascribed to infectious effluvia, proceeding from the false birth; the ill effects of which, is supposed to be in a great measure prevented from spreading, by immediately burying the abortion, burning straw directly over the place, and smearing the hind part of the cow with tar; but above all, keeping her separate, and as far apart as possible from other cows, ought never to be neglected; various reasons are assigned as the cause of this accident, but none that appear conclusive, or satisfactory, explained.

The smell of carrion, or any flesh in a putrescent state, will occasion it.

11. The udders of cows are subject to two diseases.
 - a. The yellows; this brings on a false quarter, that is a deprivation of milk in one teat, accompanied with

a swelling and inflammation. For this, the following remedy is said seldom to fail, viz. flour of mustard, mixed with any liquid ; 2 oz. a dose, and repeating the same two or three times in the course of twenty-four hours.

b. Cow-pox, this well known disease is supposed to be owing, to the milkers having been accustomed, to dress horses which had the Grease. A cow never has it twice.

CRAAB.

A disease which attacks the bark of fruit trees ; it destroys particularly the inner bark, by reducing it to a blackish powder. It is supposed to arise when transplanting trees, by changing them to a different point of the compass ; for instance, by placing the north side of the trunk towards the south ; where the power of the sun parches, and in a manner burns, the tender bark—The cure, is cutting out the whole diseased part, and coating it with a plaister made of equal parts of fresh clay, garden mould, and cow-dung.

CREAM.

1. In most places the milk is *skimmed* with a dish ; but in Yorkshire, the milk is *let off* through a hole in the centre, leaving the cream in the lead. The pipe, through which the milk escapes, is fitted with a tall wooden stopper : previous to drawing the stopper, a loose wide leaden pipe, 7 or 8 inches long, is put over it ; the base of this is notched, or otherwise made uneven, so as to admit the milk to steal away beneath it, without endangering the escape of the cream, which (the pipe being removed) is afterwards let down through the same aperture.
2. In Essex, the milk, after standing 24 hours, is *fleeced* ; and the skim milk is drawn off from the leads, into vessels (not lined with lead, but) of an increased depth ; this is called *doubling* : here it remains for 12 or 24 hours, during which time, as the cream rises, it is *fleeced* two or three times. It is then *trebled* or put into tubs, or still deeper vessels, where it

is occasionally skimmed, and kept so long as any appearance of cream or richer milk is found to form upon the surface—The butter made from the after-fleeing of the milk, is of a paler colour, and of an inferior quality to that made from cream, which rises the first 24 hours: it is generally churned apart, and sold at a lower price.

3. *To preserve cream* sweet for a length of time—Take 12 oz. of white sugar, and dissolve them in the smallest possible quantity of water, over a moderate fire: after the solution has taken place, the sugar ought to be boiled for about two minutes in an earthen vessel; when 12 oz. of new cream should be immediately added, and the whole uniformly mixed, while hot: let it then gradually cool, and pour it into a bottle, which must be carefully corked. If kept in a cool place, and not exposed to the air, it may be preserved in a sweet state for several weeks, and even months.

CRESSES.

1. Garden Cress. (*Lepidium Sativum*.)
2. American Cress. Grows high, the leaves gathered.
3. Broad-leaved Cress.
4. Curled Cress. A variety of the Garden Cress.
5. Indian Cress. See Nasturtium.

Culture, &c. of Garden Cress.

1. PLANT.

- a. This is raised according to the season of the year, either on a hot-bed, under glasses, or in the open ground; and the seed sown very thick, either in drills, or broad-cast and fine mould sifted over it; in hot weather must be shaded and watered: requires to be sown every week.
- b. Either Mustard, Rape, Turnep, or Radish, is sown near it, to be cut at the same time.
- c. If they raise the earth into a kind of cake upon their tops, it should be broke, by whisking the earth lightly with the hand, or the end of a small slender birch broom.
- d. The hoar-frost must be washed off before the sun rises; or the plants will change black, and go off.

2. USE

c. The seed leaves in fallers.

" CROFT.

" A small inclosure."

CROPS.

Whatever course of crops is preferred, it is generally a rule, that *two robbing or impoverishing crops*, should not be taken immediately following; but a *meliorating crop*, should immediately succeed an *impoverishing one*—All crops of *corn*, or such as stand for *seed*, are in general, reckoned to be *impoverishers* of land; and succulent or *juicy plants*, that *make shade and cover the ground*, are found to be *enrichers of land*; as turneps, peas, vetches, and several others.

CROWFOOT.

1. NOXIOUS.

a. Upright Meadow Crowfoot. (*Ranunculus Acris.*) This is called, by the common people, Butter-cups and Butter-flowers, and this name originated from a supposition, that the yellow colour of butter is owing to these plants; that this should be the case, seems scarce probable, certainly it receives no good taste from it—Cattle in general will not eat it; yet sometimes when turned hungry into a new field of grass, or have but a small spot to range in, they will feed on it, and hence their mouths have become sore and blistered. When made into hay it loses its acrid property, but is too stalky and hard to afford good nourishment. It should seem, therefore, to be the interest of the farmer, as much as possible, to root out this plant from his meadows, that its place may be supplied with good sweet grass. Many continental farmers attribute the sudden death of cattle, which is often inexplicable, to their feeding on this plant; and therefore carefully extirpate it from fields and meadows.—Our peasants use the fresh roots as an excellent cautery for their cattle.

b. The Celery-leaved Crowfoot (*Ranunculus Sceleratus*) is suspected to have proved poisonous to sheep.

2. USEFUL.

- a.* Various leaved Water Crowfoot (*Ranunculus Aquatilis*.) It is the practice at Ringwood in Hampshire, to feed their cattle almost intirely with this plant; (or a variety of the *Ranunculus Fluviatilis* of John Bauhin). The cattle relish it so highly, that it is thought unsafe, to allow them more than a certain quantity, and they give with this food a sufficient quantity of good milk. Hogs are also fed with the same plant; and they improve so well, that it is not necessary to allow them other sustenance, till it is proper to put them up to fatten.
- b.* Spear-leaved Crowfoot. (*Ranunculus Flammula*.) Is used in many parts of Scotland to prevent rennet from corrupting or smelling—A handful of the stalks and leaves is cut into small bits, and boiled for about the space of half an hour in water; not unfrequently a small quantity of nettles is likewise added: they are also thought to make it stronger, and to be very serviceable in preventing the unctuous part of the milk from being carried off with the whey.
- c.* Creeping Crowfoot. (*Ranunculus Repens*.) Cows are very fond of this plant.
- d.* Bulbous Crowfoot. (*Ranunculus Pulbosus*.) The fresh flowers, boiled with allum, dye both silk and worsted of a deep lemon colour. The dry flowers dye serge, previously boiled with with allum and wrung out, of an orange colour, by long boiling; of a lemon colour, by short boiling; and silk of a beautiful brimstone colour, without allum. Hogs are fond of the roots.

CROWN-GRAFTING.

Is performed upon stocks which are two large for cleft-grafting: the head being sawed or cut off horizontally, several grafts are inserted around the crown or top, betwixt the rind and wood; the grafting first sloped off on one side, forming a kind of shoulder at top, slit the rind, and separate it from the wood

with a wedge, and introduce the grafts between; then tie and clay them.

CROWS, (see vermin.)

CUCUMBER.

1. Common Cucumber. (*Cucumis Sativus*.) Var.
 1. Common Green; 2. Long white Dutch—this is better than the first, being firmer and having fewer seeds.
- 2 Long Turkey C. (*C. Flexuosus*.) This is greatly preferred to the former, but is raised with difficulty.
3. Sanspareil C. Early, prolific, fine flavoured; the fruit from 15 to 20 inches long.

Culture, &c. of the Common Cucumber.

1. INCREASED BY SEED.

- a. Should be three or four years old, but if more, provided it will grow the better, as it will produce less vigorous plants indeed, but more fruitful.
- b. In dry hot weather soak the seeds for the third crop the night before they are sown, in water or milk—In cold unfavourable weather some raise this crop upon a hot-bed; and afterwards transplant them with a ball of earth into the open ground.
- c. Seed should be got from fruit growing near the root, which must remain on the vines till ripe, then hung against a wall till the rind begins to decay, when the seed and pulp is to be scraped into a vessel, to remain there for eight or ten days to rot the pulp; after which, pour several waters on them (stirring it well at bottom) till the seeds are clean; and lastly, dry them upon a mat.

2. INCREASED BY LAYERS.

- a. As soon as several flower-buds appear on a plant, bend the second or third joint of a branch below the blossom, fasten it firmly into the ground, and cut off the capillary point of the plant; it speedily takes root, and must be separated from the parent stock: as each root has only to supply a few fruits with nourishment, it saves room, labour, and time, and affords a constant supply for eight, twelve, and more months,

which is not so liable to degenerate, as if they were raised from a variety of seeds.

3. FIRST CROP; FROM SEED.

- a.* The plants are raised at or before Christmas, in pots, plunged either in a stove or hot-bed, and transplanted under frames, two healthy plants serving for each light.
- b.* The glasses should be frequently wiped, to prevent moisture falling on the plant.
- c.* Should be watered, and fresh air admitted with caution.
- d.* When they begin to push the first runner, stop or prune at the first joint, to promote strength.
- e.* The male flower should be placed upon the female, and gently pressed down, to impregnate them.
- f.* The water should be set in the frames, till as warm as the air in the frames.

4. SECOND CROP.

- a.* Is raised on a hot-bed under bell or hand glasses, from seed sown about the middle of March or a little later, according to the weather, and pricked out on a more moderate hot-bed, 2 inches distant from each other, and shaded till they take root. In April they will be fit to be planted on the ridges, the glasses to be first placed 24 hours on hills, $3\frac{1}{2}$ feet or 4 feet asunder, the middle of the hill is to be hollowed with the hand, and 4 plants set in each; at first the glasses are to be raised opposite the wind, as the season advances, on the south; when the plants are too large for the glasses, they are to be raised on bricks or forked sticks; and wholly removed the latter end of June or beginning of July.
- b.* The time for watering is at eight or nine o'clock in the forenoon, and at four or eight in the evening.

5. THIRD CROP.

- a.* This crop is raised in the open ground, holes being dug and filled with fine earth, hollowed in the middle in form of a basin, and eight or nine seeds sown in the middle of each; when the rough leaf begins to appear, only four of the most promising and best situated is to be left in each hole, stirring the earth, and adding

- a little more round the shanks, and giving a little water.
- b. Till the seed leaves expand, they must be well guarded against sparrows, which are very fond of the young tender heads.
- c. The fruit of such as are trained up a wall, is freer from spots than such as lay on the ground.
- d. The fruit from this crop is fit for pickling the latter end of July or beginning of August—50 holes will furnish about 200 twice a week; some may be left to grow large for the table.
- e. The London gardeners generally raise this crop between rows of cauliflowers, planted $4\frac{1}{2}$ feet asunder; or on beds 3 or 4 feet wide, with a foot alley between each.

6. FOURTH CROP.

- a. Seed sown from the middle of August till the middle of September, under glasses in a hot-bed, to produce fruit in October, November, &c.

7. USE.

- a. When fresh, for the table; and also pickled; the last when young, called *Gerkins*, and when old *Mangoes*.

CULTIVATOR.

An implement in husbandry which answers the purpose not only of *ploughing*, but *barrowing* likewise, without cutting the quick grass (blue grass by some in America) roots in two; which is an advantage that ploughing has not.

1. Nottinghamshire C. This has, in common with a plough, a beam, wheels, and handles; instead of a share, there are two bulls, the first 4 feet 6 inches long, with four teeth; the second 3 feet 9 inches, with five teeth—the teeth are 2 feet long, and bent near the bottom, for the share part to be flat on the earth; the teeth are 12 inches apart, and by intersecting the distance, is reduced to 6, and the breadth of the share being 3, reduces the intermediate space to a very small dimension.—Four horses and one man, will plough from six to seven acres per day, in sand land.

2. Cooke's C. Called also a *Skuffler*.—It consists of a diagonal beam, with from three to seven shares, of different sizes, for various uses, applied to two handles, by which it is guided laterally, and may also be forced into the ground to any given depth at pleasure. It is used as a substitute for ploughing and harrowing, by tearing or lacerating the soil internally, without tearing a furrow. The narrow shares or scarifiers are, in some cases, used for obtaining a tilth in light soils without ploughing at all; and the broad shares for cutting up a fleece of weeds, and afterwards leaving them to perish on the surface of the land. In strong compact land one previous ploughing is necessary.

" CULVER.

" Pigeon or Dove: a Culver-house."

CURRENTS.

1. *Common Currant tree*. (*Ribes Rubrum*). *Var.*
 - a. With dark or *pale red fruit*; the last called *Champaign Currants*. "The old *darker red* and smaller currant is a much *richer fruit*; but is nearly lost by a preference given to *size*, in the paler and red currant."
 - b. With *white fruit*.
 2. *Black Currant-tree*. (*R. Nigrum*.)
- Culture, &c.*

1. SOIL.

- a. The fruit is always best tasted when they grow in a dry soil, and an open spot of ground.

2. INCREASED.

- a. By the same methods as the gooseberry-tree; which see.
- b. By grafting.

CYPRESS.

Culture, &c. of the Levant Cypress.

1. SOIL.

- a. A warm sandy, gravelly soil.

2. INCREASED.

- a. By seed—Which must be procured in the cones from abroad, and exposed to a gentle heat to make them open.

3. TREE.

a. Grows to a large size; and *Millar* thinks it would produce in England, planks fit for use, in as short a time as the oak.

4. USE.

a. The timber of this tree is very valuable, and is said to resist the worm, moth, and all putrefaction, and to last many years.

Culture, &c. of the Virginian Cypress.

1. SOIL.

a. Grows naturally in swamps, or where the water covers the ground 3 or 4 feet.

b. Suits a boggy soil.

2. INCREASED.

a. By seed, procured in the cones from America.

b. By cuttings, planted in the spring, before the trees begin to shoot.

3. TREE.

a. In America grows to such an amazing size, that boats or pettiaugres, capable of carrying a considerable burden, are formed from the trunk of a single tree.

4. USE.

a. Makes choice shingles, poles and boards, of long duration.

b. From the cones issue a most fragrant balsam, like balsam of *Tolu*.

Culture, &c. of Maryland Cypress.

1. SOIL.

a. A moist strong soil.

2. TREE.

a. According to *Millar* it is a tree extremely worth cultivation in England, as it grows in a much colder country, to a considerable height.

3. USE.

a. Affords an useful timber.

As the above trees have been many years planted in England, it is to be wished, that the public were acquainted with the size they have attained to, and the quality of the wood.

ROMAN CYTISUS. (*Colutea Arborescens.*)*Culture, &c.*

1. INCREASED.

- a. By suckers; planted in weak stubble land, at 3 feet distance.

2. PLANT.

- a. In a little time over-runs the ground to that thickness, that it may be mowed three times a year, not suffering it to grow above a foot high before mowing.

3. USE.

- a. The leaves and flowers, which are to the taste as sweet as the richest *Dutch Clover*, speedily fatten cattle.

DAIRY.

1. Should be *roomy, airy*, and *shaded* from the sun, and the windows to face the north; wherever a stream of *water* can be brought through it, the opportunity should always be embraced.
2. *Wooden vessels* supposed to be the best for holding milk, but unless kept clean, communicates a disagreeable taste to the milk.

One of the best methods of cleaning and seasoning wooden vessels for milk, is, after being well rinsed in cold water, to put them into boiling water for the space of about three minutes: then to be kept dry till wanted.

DIBBLING.

It is objected to dibbling of seeds, and to transplanting of any plants with the dibble, particularly in strong land; that in thrusting it down, the earth is so much compressed all around the side of the hole, that in wet weather the hole stands filled with water, and in dry weather the sides of the hole become so hard, that the young tender fibres cannot spread to collect nourishment for the plant.

1. Dibbling of Wheat. This is principally practised in Suffolk, Norfolk, and Lincolnshire.—The method is, after rolling with a light roller, a man walking backwards on the *flag*, with a dibble of iron, the handle about 3 feet long, in each hand, strikes two rows of holes, about 4 inches from one row to the other, on each flag; and he is followed by three or four children,

to drop the grains, three, four, or five in each hole. In this way, from six to seven pecks of seeds are deposited, at very equal depths, in the centre of the flag. A brush harrow follows to cover it; the expence eight or nine shillings an acre. There are several circumstances which render this method superior to the broadcast—the treading so equally is very beneficial upon light soil; and in dry weather hurtful to none. The seed is laid in at an equal and good depth; and it is all in the flag itself, and not dropt in the seams, where weeds, if any, will arise: and there is some saving in seed. The fact is, the crops are superior to the common, and the samples more equal. It is not common to hoe, except only when one row is put in instead of two—Some use a frame, which strikes many holes at a time; but the work is not so well done.

2. Beans, Nuts, and Potatoes are frequently planted with the dibble, a line being generally drawn across the ridges to guide the people.

3. The implements for Beans, Nuts, and Potatoes, are—

a. The common dibble, about 18 inches long, with a handle like a spade, and the point shod with iron.

b. Long dibble: this is about $3\frac{1}{2}$ long, and is used for Potatoes.

c. The following method of making holes for beans, has been recommended, viz. Take a plank of oak, of such a size as a man can easily manage, by a handle fixed upright in the middle of it, and of such thickness as not to give way in working; in the under part of this plank, let there be fixed wooden pegs, of such length, and at such distance from each other, as may form proper holes in the ground for the beans: when the land has been properly prepared, the workman must thrust the pegs of this instrument into the ground, and proceed side-ways, managing it so, that there may be the same distance between the last row of holes made by the first impression, and the first row made by the next, as there is between the rows of any one impression. The youngest children may be taught to follow the instrument, and drop a bean into every hole that it makes.

" DIET.

" Ought to be attended to; and in the country be simple, plain, and neatly dressed, unpoisoned with foreign, harsh ingredients. Spices, salt, condiments; &c. to be moderately admitted. In Essays and Notes on Husbandry are good general rules to the purpose."

DOGBANE. (*Apocynum Cannabium*.)

Culture, &c.

I. PLANT.

a. This plant is a native of North America, but grows very freely in England, and is propagated by parting of the roots; which are apt to spread so much in gardens, as to be troublesome.

2. USE.

a. In America the people prepare the stalks in the same manner as we prepare those of Hemp: It is spun, and several kinds of stuff woven from it.

DOVES.

1. *Ring Dove*, Wood Pigeon, or Queest (*Columba Palumbus*)—*Brown*, author of the Compleat Farmer, hatched the eggs of this bird under a tame pigeon; and they kept to the dove-cot, and bred much better than the common pigeons, which they exceeded in size and hardiness; in winter they lived upon ivy-berries, turneps, and a great many other things that pigeons will not—As in similar attempts, made by others to domesticate them, they always took to their native haunts; it would be adviseable to rear them under fancy pigeons, which do not wander far from home.

2. *Collared Dove*. (*C. Risoria*). This bird is frequently kept with us in aviaries, and cages, in both of which they readily breed; and doubtless would in any pigeon house; being a very hardy bird.

The *ground Dove* (*C. Passerina*.) which is a native of the West India Islands, and excellent eating, will propagate in a state of domesticity, the circumstance having been tried at Vienna; and probably would in England, if introduced. (See Pigeons.)

DRAINS.

1. Made with a plough.

a. For *open drains*—(1.) Arbuthnot's draining plough; improved by Rack and Pinion, to work to any width—see Sharp's figures. (2.) Two draining ploughs, different from the above, are given us in the General View of the Agriculture of Leicestershire, plate 3, fig. 6.—And in that of the county of Durham, plate 1, fig. 2. (3.) Dr. Darwin's.

b. For *under drains*—Scott's Mole plough; (see plate fig. 10) this breaks the surface no more than a thin coulter would, drawn along, which mark disappears in a few days: the drain it makes is from 1 foot to 18 inches deep; and the bore $2\frac{1}{2}$ inches diameter. Price about two guineas.

2. Made with a Roller, or Wheel.

a. The *draining wheel* is made of cast iron, *four hundred weight*, 4 feet in diameter; the cutting edge, or extreme circumference of the wheel, is half an inch thick, which increasing in thickness towards the nave or centre, will, at 15 inches deep, score out or cut a drain half an inch wide at bottom, and 4 inches wide at the top. This wheel is so placed *in a frame*, that it may be *loaded* at pleasure, to be made *to operate to a greater or less depth*, according to the resistance made by the ground, which thus scored out in the winter, the *wheel-tracks* are either then *filled with straw ropes*, and lightly covered over; or left to crack wider and deeper, during the ensuing summer. The fissures are then filled with *twisted straw* and *brushes*, and covered lightly with some of the most porous earth that may be most conveniently at hand; and thus upon the grass or ley land, are hollow drains, formed at little or no expense, and which, upon trial, have been found to answer extremely well.

3. Brick Drains.

a. Plate, fig. 6, represents for a small drain, a hollow brick, two of which, placed one upon the other, form the pipe.

b. Plate, fig. 7, represents bricks for a large drain—D D two bricks—with E a stone on the top.

The mould pressing on the sides of the bricks, keeps them firm in their place: turf is laid upon the stone, with the grass side downwards.

4. Stone Drains.

- a. The drains cut 10 or 12 inches wide, with perpendicular sides, and flat stones, so placed, as to leave a water-course at bottom, by setting two flat stones triangularly, to meet at the points—Or by covering the bottom with a flat stone, and then putting three other flat stones upright, leaving the water to find its own way between them—in both cases filling up the residue of the drain to the top, or near the top, with loose stones.

Where gravel is more plentiful than stones, screened or washed gravel has been found to answer the purpose very well. Stones from the sea-side are particularly adapted for filling drains, being smooth, and generally round, the water passes more freely between them.

- b. *Main drains*—3 feet deep and 18 inches wide; the bottom laid with flag-stones, and the sides built up to a sufficient height with stones, and covered with flag-stones, over which are laid sods of turf, with the grassy sides undermost: these are covered with earth, sufficient to admit the plough.

The *smaller drains* are generally directed, at an acute angle, into the main drains.

5. Sod or Earth Drains.

- a. Dug 2 spade, or 2 feet deep, then with another instrument (see plate, fig. 3.) of 4 inches wide, take out the soil of the drain made by the spade 12 inches deeper; cover it with the sods first dug out, if the ground was found strong enough to admit of it, otherwise put in some black thorns, sufficient to bear the sods.

It is the opinion, that those drains have lasted longest, which have the least water-way left at bottom; as, in that case, the force of the water has been sufficient to clear away any little obstacles that might chance to get in.

- b. Dug two or three spits deep with a broad spade, then the bottom taken out with a narrow one, (fig. 3.) and filled with stones.

c. A furrow draw with a plough, and cleared by a common spade; then the draining instrument is introduced to the depth of 18 inches from the surface; and after the loose mould is taken out with the scoop, (see plate fig. 4.) black-thorn bushes, or which is better, heath, are carefully laid along the bottom, covered with strong wheat-straw, and the whole closed in.—*Wheat-straw*, twisted to the thickness of a man's leg, has been found to be an easy and cheap way of supplying the want of other materials—fig. 5. is an *engine used to twist it*.

If land lies upon a *declivity*, care should be taken, that the drains have an easy, *gentle descent*; for, if they have too quick a fall, they are apt to *burst*, or to excavate; and having lost their protection below, the least pressure from above will destroy the drain.

d. Two and a half or 3 feet deep, and as narrow as possible; a stratum of small stones about 20 inches thick, laid in the bottom; above these, a stratum of heath or rushes 6 inches thick, and the remaining vacuity filled up to the surface with earth.—See the plate, fig. 8, and 9, for the order, in which some place the stones.

e. On stiff lands hollow drains have been tried without stones—narrow at the bottom, and covered half way up with fods, or square spits of the surface sward, resting on ledges cut for that purpose.

f. Sods raised up in the drain, and covered with others.

Under-drains are sometimes choaked by the singular mode of under-ground vegetation of the marsh Horfe-tail (*Equisetum palustre*): the only effectual remedy, is the simple expedient of casting the *under* into *open* drains.

g. Open drains are of two kinds, in form either of a ditch, with perpendicular sides; or of a broad furrow, having the sides of so gentle declivity, as to admit the cart and the plough to go over them.

In some places the earth or mud thrown out of drains, when digging or cleaning of them, is sown with oats, or planted with potatoes.—If the clogs dug out are clay, burnt, the ashes of them laid about

a foot deep, bind, and form an excellent bottom for farm yards.

- b. To keep clay tillage-ground dry, it is found necessary to consult nature, and make the direction of the ridges follow the course of the declivity; making drains across whenever the water does not follow the furrow—These drains should be always kept free and open with the spade, the earth being liable to fall in, from various accidents.
- i. Mr. *Elkington's method* is to work the drains up, beginning at the fall, and working upwards; he makes use of a borer to find the spring.

The borer is of the same kind, as is the instrument made use of for boring in search of pit-coal, &c. the lower part is in the shape of a large auger, from $2\frac{1}{2}$ to 3 inches in diameter. It is made in different lengths, and screws one to the other, to any length you choose: it is worked by two men, who, after they have bored one piece into the ground, screw on another length, and so on till the spring is found, or as deep as they think proper. The borer above the auger part is about an inch square; and the men have each of them an iron bar, one end of which is fitted to the square part of the borer, which serves as a handle to assist in boring.

DRILL-MACHINES.

1. Barrow-drill; sows a single row at a time, and is adapted to all grains or seeds.
2. Horn's; this also scatters the seed in the broadcast manner.
3. Wellward's; drills seven rows at a time, each 7 inches apart, and any required quantity per acre, of any kind of seed; is drawn by two horses abreast, in a double pair of shafts, is very simple in construction, and not liable to get out of order.
4. Cooke's; drills six rows at a time, and thus sows an acre of land in an hour, and is drawn by a single horse; and the quantity of seed consumed, is about six or seven pecks to an acre, which is about half the quantity used, in sowing by the hand in the broadcast method.

5. Dr. Darwin's—This is simply an improvement of that described in Mr. Tull's book, by enlarging that part of the axle-tree which delivers the grain into a cylinder of some inches diameter, with excavations in the rim; which rim rises above the surface of the corn in the seed-box, and lets drop again into the seed-box whatever grains fill the holes above the level of the rim, as that side of the cylinder ascends. Whence the quantity delivered is uniform, and no grains are in the way to be bruised or injured.
6. Ducket's—This is a kind of plough having ten small shares, 9 inches apart; these cut as many drills, and the seed is sown broad-cast (but not quite so much seed as in the common method) over these furrows; and a light pair of harrows, which work upon a kind of hinges in the middle, follows in the same direction as the drills, levels the surface, strikes the seed into the furrows, and covers it with the greatest accuracy. Harsh and stubborn lands are inapplicable to this instrument: it drills wheat, barley, peas, or beans, &c.

See turneps, for a method of drilling its seed with a plough.

7. Mure's—This is a drill-plough, with two mould-boards at once going, forms the ridge with the dung in the centre of it, makes a drill, sows the seed, and covers it. It answers for turneps, beans, cabbages, and potatoes. The plants being reduced to a proper distance, with the short-hoe, a man with an old horse with the same plough, may hoe four acres a day, pare the sides and bottoms of the furrows, mix the soil, lay it up to the plants, and leave not a weed to be seen. Turneps so grown, exceed in weight per acre the broad-cast method 50 per cent.

The best direction for drills or ridges, is N. W. and S. E.

DUCK.

1. Muscovy Duck. (*Anas Moschatus*.) Much larger than the common duck, lays more eggs, and sits often.

er; the flesh of a very fine flavour—Will breed with the common duck.

2. Common Duck. (*A Boschas.*)

a. Like the wild duck in shape and size, but often differing in colour: as white, black, pied, &c.—Some have a downy tuft on their head.

b. With a shorter neck, larger head, and broad turned up bill—Lays many eggs.

c. French or grey D. much larger than the common; but the flesh not so fine flavoured.

d. With a hooked-bill. It seems only to be kept in England out of curiosity; but in *Germany*, it is said, the breed is encouraged, almost to the exclusion of the common sort.

The common D. begins to lay in February, and must be well attended to, or they will lay their eggs abroad; sits about 31 days; the ducklings should have water in broad dishes, and not be suffered to go to a pond, till a month old; they also fatten sooner by being kept from it when full grown: feed, besides corn, on lettuce and cabbage leaves, and also on acorns, which makes them very fat. Hens readily hatch duck eggs, and rear the young; but are at first much distressed at the ducklings going into the water; It is observed, that ducks hatched after Midsummer, usually get cramps, sprawl about in an odd manner, and throwing themselves on their backs, die of convulsions.

” EDISH.

” Grass after mowing—latter pasture.”

” EGISTMENTS.

” Cattle taken in and fed or grazed by the week or month.”

EGLANTINE OR SWEET-BRIAR.

Culture, &c.

I. INCREASED.

a. By seed—The hips to be kept during winter in a tub, when the seed easily rubs out, and being sown in

March, comes up the next year. A crop of peas may be sown with them.

b. By dividing the roots of old plants.

2. USE.

a. As a fence to fields—This was done in Scotland, by laying the young plants 18 inches apart on the grafs before the dike was made up; in four or five years they formed a fence so strong, that neither sheep, black cattle, or horses could pass: where the fence is thin, it may be thickened, by laying down branches.

This shrub was not known to *Linnaeus*—*Lightfoot*, in his *Flora Scotica*, names it *Rosa Suavifolia*.

ELDER. (*Sambucus Nigra*.)

1. With black berries.

2. With white berries, grows in several parts of Staffordshire.

3. With green berries.

4. With variegated leaves; and with Parsley shaped leaves.

Culture, &c.

1. SOIL.

a. Will grow upon any soil, or in any situation.

2. INCREASED.

a. By sowing the seed as soon as the fruit is ripe.

b. By cuttings, planted at any time from September to March.

3. TREE.

a. Should not be planted near habitations, because at the season when it is in flower, it emits such a strong scent, as will occasion violent pains in the heads of those who abide long near them; and often causes fevers, especially if slept under.

b. No animal will eat it.

c. The berries said to be poisonous to poultry.

d. The wood is hard, tough, and yellow, and where box-wood is scarce, is used to the same purpose as that is put to.

4. USE.

a. The wood is made into tops for angling rods, needles for weaving nets, &c. It is the principal fuel in the N. of Russia.

The green boughs are judged to be extraordinary fuel for making of pot-ash.

- b. If sheep, that have the rot, are placed in a situation where they can get at the bark and young shoots, they will soon cure themselves.
- c. The bark, with copperas, dyes a black colour.
- d. If turneps, cabbages, fruit-trees, or corn (which are subject to blights, from a variety of insects) are whipped with the green leaves and branches of elder, the insects will not attack them.
- e. Because of its quick growth it is planted for hedges, which in a few years must be plashed, as it becomes naked at bottom.
- f. The young umbels before the flowers expand, are, by some, esteemed for pickling—the full flowers are used to give a flavour to vinegar, and to make wine.
- g. The berries dye cloth a brown colour; silk a peach colour, and, with allum, a deep purple; and are employed to give a red colour to raisin or sugar wines.

Of the berries also is made a wine which has something of the flavour of Frontinac; a rob; and an oil.

ELM. (*Ulmus Campestris*.)

- 1. Common Elm. Leaves rough, bark of the trunk cracked and wrinkled: common in the N. W. counties of England.
- 2. Wych-hazel. Leaves broad and rough, bark of the young branches smooth: common in the N. E. counties of England and in Scotland.
- 3. British Elm. Leaves oval; grows in the northern counties. The wood not so good as the first sort.
- 4. Dutch Elm. Leaves oval, acute pointed, and rough; a fungus bark: brought from Holland in King William's reign: the wood of no value.
- 5. Small-leaved Elm. This is supposed to have been brought from Germany.
- 6. Smooth narrow-leaved Elm. The leaves come out later in the spring and continue longer than those of the English Elm: this has been called by some the Irish Elm.

Culture, &c. of the Common Elm.

1. SOIL.

- a.* Thrives well, and produces the toughest and best timber in a hazely loam; will also succeed on gravel or sand; but will not grow well either on chalk or a morass.
- b.* In a gravelly soil the wood is said to be brittle, and unfit for the wheelwright.

2. INCREASED.

- a.* By seed.
- b.* From chips. When elm timber is felled in the spring, sow the chips made in trimming or hewing them green, on a piece of ground, newly ploughed, as you would corn, and harrow them in. Every chip which has an eye, or bud-knot, and some bark on it, will immediately shoot like the cuttings of potatoes; and the plants thus raised, having no tap-roots, but shooting their fibres horizontally in the richest part of the soil, will be more vigorous, and may be more easily and safely transplanted, than when raised from seeds, or in any other method.
- c.* From suckers—these may be raised in great numbers, only by protecting from cattle the stool of a fallen timber tree: it should be earthed up in spring, and, by the autumn following, the layers or shoots will have taken root, when they may be separated from the stool.

3. TREE.

- a.* Requires an open space, and much room for its roots to spread in.
- b.* May be planted in hedge-rows with less injury to the quick hedge than any other tree.
- c.* As the value of this timber consists more in the length and bulk of the shaft, than in the crooks and contents of its branches, it is the business of planters to train them up tall and straight, to keep their shafts clean, and not to suffer them to branch till within a few feet of the top.

The present mode of lopping, though conducive to the lengthening of the shaft, fills it full of rough protuberance, which, by admitting water, are very

prejudicial to the timber, and occasions the defects so generally complained of. It has also been observed, that the circles, which when the tree is felled, shows its annual increase, are smaller the year after the tree has been lopped.

- d.* Does not injure the grass that grows under it.
- e.* This tree is often attacked by a disease, which makes the bark bleed, burst, and the tree afterwards decays and becomes hollow.

4. USE.

- a.* The wood being hard and tough, is used to make axle-trees, mill-wheels, keels of boats, chairs, coffins, and water pipes.—If boards, cut out of the tree in March, are laid a month in water they will not shrink.
- b.* For hedges—The plants raised from chips have greatly the advantage of others, as five or six, and frequently a greater number of stems will arise from the same chip; and such plants, when cut down within 3 inches of the ground, will multiply their side shoots in proportion, and make a hedge thicker, without running to naked wood, than by any other method yet practised. If kept clipped for three or four years, they will be almost impenetrable.
- c.* In Norway the bark is dried, ground, and mixed by the poor among their meal: the powder of the bark is also boiled up with other food to fatten hogs, who thrive so much upon it, that the virtues of the bark, are even proverbial there.
- d.* In some parts of Hertfordshire they gather the leaves in sacks, for swine and other cattle.

Culture, &c. of Wych-hazel or Wych-elm.

1. INCREASED.

- a.* By seed, gathered in summer, and allowed to dry a few days before it is sown; the beds covered with mats till September, and sprinkled over with ashes in winter.
- b.* By layers, produced by earthing up stools in spring.

2. TREE.

- a.* Grows very fast and to a large size; is widely branched, not tapering, like the common elm. Is

of so rapid a growth, that a tree of this kind has been known to grow in thirty years, 60 feet of timber.

- b.* The wood is hard and tough, especially on a gravelly bottom.
- c.* When planted in coppices, furnishes fine straight poles, at 9, 12, 15, or 20 years growth, according to the use they are wanted for, as hurdles, gates, &c.—May not the bark be water rotted, and used as a substitute for hemp for ropes? single fibres have been 20 feet long.

3. USE.

- a.* The wood is used to make axles, screws for presses, nave-stocks for wheels, and boards for numberless uses.
- b.* In the Highlands of Scotland good ropes are made of the inner bark—they also use the bark in powder, as a cure for burnings; both which leads to the destruction of the trees. Deer prefer the bark to that of any other tree, and it is given to them as winter food.

From the bark has been obtained a yellow brownish dye; and it has been manufactured into a strong brown paper.

ENDIVE.

- 1. Green curled E. the best for the main crop.
- 2. White curled E.
- 3. Batavia E.

Culture, &c.

1. SEED.

- a.* Sown from April to the middle of August.

What is sown before June should be in small quantities, as it soon runs up.

2. PLANT.

- a.* To be planted from the seed bed from 12 to 15 inches asunder.
- b.* When full grown the leaves to be carefully collected together, and tied to blanch.
- c.* Early in the spring to be planted for seed.

d. At Isleworth, near London, the gardeners adopt the following mode of preserving endive: In winter time, a bank is raised 3 feet high, and laid sloping to the sun; on this bank the endive is planted out in the month of September; at the bottom of the bank peas are sown—By this means the endive is prevented from rotting, and the peas are ripened as early, as if each had been planted in borders under a wall.

3. USE.

a. The green and white as salad plants; the Batavia for soups.

EXOTICS.

From some late attempts that have been made to raise plants natives of the East and West Indies in the open ground; it appears, that several have flowered and ripened their seeds; and it is much to be wished more efforts were made to increase the number of our useful plants. The late Dr. Fothergill cultivated, with the greatest attention, at Upton, near London, every plant that seemed likely to be of use in physic or manufactures, and which he could procure at any expense; and it is to be regretted, that the public were not made acquainted with the fruits of his labour. The greatest difficulty is over after the plants have once ripened their seeds; as plants raised from such seeds, grow annually hardier and quicker of growth.

With respect to fruit trees, it would be better to procure such as have been introduced from the Indies into Italy, Spain, or France, than direct from the Indies into England; as for example, the Quinquina, Balm-tree, Sago, Cocoa, and other Palm-trees, by being first transplanted from their native soil into the *Canary Islands*, and thence to *Andalusia*, the most southern province of Spain, at length have been, by successive transplantation, accustomed to the climate of *Madrid*.

"EXPERIMENTS.

" Advantageous to register them and all particulars."

" FALLOWS WITH CROPS.

" Preferable to naked fallows—these last, exposed more to the sun, are drier and more exhausted by exhalation."

" FARM.

" Divided into *grain husbandry*, which impoverishes soil; and into *live stock husbandry*, which restores and invigorates the ground."

" FARM-YARD.

" A very important part of the homestead of a farm; very earnestly recommended to the better attention of American Farmers, of which see Mr. Lawrence's new Farmer's Calendar, and Essays and Notes on Husbandry."

" FENCE.

" A subject of the first and of continual attention; of which Dr. Anderson treats well in his Essays on Husbandry, as doth Mr. Lawrence in his New Farmer's Callendar."

FENNEL. (*Anethum Fœniculum.*)

1. Common Fennel.
2. Sweet Fennel. The seeds of this are generally imported from Germany and Italy; and the plant being sweeter than the former, is by many preferred to it.

Culture, &c.

I. PLANT.

- a.* The cultivation is simply sowing the seeds as soon as they are ripe; and keeping the plants when they come up in the spring clear of weeds. It may also be increased by suckers, offsets, and partings of the roots.

2. USE.

- a.* The young buds for sallots; and the young stalks peeled, and slit lengthways, are eaten like celery; as are also the blanched roots of the sweet.
- b.* The leaves, seeds, and roots, are used in medicine.

FERN. (*Pteris Aquilina.*)

1. DESTROYED.

- a. By an instrument of the following description—At the end of a stick a blade is fixed with dull edges; a woman uses this to strike the stems and bruise them, and will do several acres in a day; this is repeated two or three times in a summer; the next morning a gummy consistence is found to exude, and the fern gradually disappears.
- b. When young is destroyed by twitching off the tops.
- c. By pouring urine upon the tops.
- d. By a very heavy roller.

2. USE.

- a. For thatch: When used for this purpose, are pulled up by the roots in the beginning of October; care must be taken that they are not brittle. They are generally used with the leaves, when dry, but not withered; for if they are withered, they do not adhere closely together, and are apt to fall off. They are placed with the root downwards, mostly in rows, about 3 or 4 inches distant, so that almost nothing but the root is exposed to the weather. This thatch on the side of the house exposed to the sun, lasts about six or seven years; but when in a northern exposure, it continues good for upwards of 30 years.
- b. Is an excellent litter for horses and cows—Cattle will eat when dry. Should be cut between the middle of August and the middle of September.
- c. Swine are fond of the roots, especially if boiled in their wash. In times of scarcity bread has been made of them, as in the great dearth in England in 1437. And in Siberia, and some other Northern countries, the inhabitants brew them in their ale, mixing one-third of the roots to two-thirds of malt.
- d. Is an excellent manure for potatoes, for if buried beneath their roots, it never fails to produce a good crop.
- e. Makes a brisk fire when dry for the purposes of brewing, baking, heating ovens, and burning of lime.
- f. The ashes are used by the makers of soap and glass.

In many parts of England the common people mix the ashes with water, and form them into balls; these balls are afterwards made hot in the fire, and then used to make lye for scouring linen.

g. Ferns, when in flower, have been used to tan leather.

The Male Fern (*Polypodium Felix mas*) has nearly the same qualities, and is used for most of the same intentions as the common Fern. In Norway the dried leaves are infused in hot water, and is then no contemptible fodder for goats, sheep, and other cattle, which will greedily eat, and sometimes grow fat upon it.

FIG. (*Ficus Carica*.)

1. Ripening in July. 1. *Early white*.
2. Ripening in August. 1. *Early long blue or purple*.
2. *Large brown or chesnut*. 3. *Large white Genoa*.
4. *Large blue*. 5. *Black Ischia*. 6. *Small brown ditto*. 7. *Green ditto*. 8. *Brown Malta*. 9. *Black Genoa*. 10. *Brown Madonna or Brunswick*.
3. Ripening in September. 1. *Long brown Naples*.
2. Several of the August Figs continue through part of September; as No. 4, 5, 7, 9.

Culture, &c.

1. SOIL.

- a. Succeed in any common soil of a garden, but requires a sunny exposure.
- b. A fine light rich earth.
- c. If gravelly or sandy, the cleaning of a pond, and rotten wood earth, should be added to make it light and rich.

2. INCREASED.

- a. By seed—Linnæus tells us, that fig-trees are *raised every year in Holland from the seed*, provided the fruit is brought from Italy. But if the fruit grew in France, England, Germany, or Sweden, where there are no wild figs, the seeds produce nothing.

"Near Cape Henry, Chesapeake, are *wild figs*."

- b. By suckers, planted in autumn or spring, for dwarfs, walls, &c. head them in spring to 8 or 10 inches, to obtain lateral branches; for standards, train them with

stems, 3 to 6 feet high, top them, and let them branch into full heads.

- c. By layers. Lay young branches and shoots in autumn or spring 5 or 6 inches deep with the tops out, they will be fit to plant off next autumn—To be managed as suckers.
- d. By cuttings; young shoots to be planted either in autumn or spring, from 10 to 15 inches long, their tops entire, on a shady border, and in rows 2 feet asunder.

3. TREE.

- a. Succeed best when planted young; the time either autumn or spring: Wall and espalier-trees at 20 feet distance, standards 20 or 30—Grows 15 or 20 feet high.
- b. Bears fruit on the former year's wood; the same shoots never bearing but once, but furnish others for the ensuing year.

As the second crop does not ripen in England, they should be rubbed off the beginning of winter.

- c. Wounding the buds with a straw or feather dipped in sweet oil, is said to hasten the ripening of the fruit, and to make it larger.

This is done in imitation of the mode practised in the Levant, of increasing and ripening the fruit by means of insects; and known by the name of *caprification*: A tree, whose fruit is thus pierced by insects, will yield nearly 300 lbs. whereas without it, it would only be about 25 lbs.

- d. *Pruning.*

(1.) Summer—either in June, July, or August, *cut cut fore-right shoots of the year, and such as cannot be trained*, tacking in regular side shoots strait and close.

(2.) Spring—should be performed either in February or March, when *old naked wood* must be retrenched, and a full supply of *young shoots* retained, which should be trained horizontally, 6 or 7 inches asunder.

Some gardeners prune in October, and cut off at the same time the leaves.

(3.) Standards—only cut in spring any irregular growths, and the *ends of dead shoots*: They have produced much fruit without being ever pruned.

d. In Germany they untie the fig-trees at the approach of winter from the espalier, and lay them down, covering them with straw or litter, which prevents their shoots being injured by the frost; and this covering is taken away gradually in the spring, but not wholly removed until all the danger of frost is over, by which they generally have a great crop.

5. USE.

a. The fruit.

b. The bark of the branches and the buds are mixed with hay for cattle in countries where this tree abounds.

c. The green branches and leaves dye a deep gold colour of a brown reddish shade.

"It is a valuable fruit when full ripe; but the *American* must be accustomed to the use of them for some time before he will admire them."

FIR.

1. Scotch Fir. (*Pinus Sylvestris.*) Cones about two inches long, upright.

2. Weymouth Fir. (*Pinus Strobus.*)

3. Spruce Fir. (*Pinus Abies.*)

4. Yew leaved or Silver Fir. (*Pinus Picea.*)

Culture, &c. of the Scotch Fir.

1. SOIL.

a. Flourishes best in a poor sandy soil; on rocks or bogs it seldom attains a large size; in a black soil it becomes diseased, and in a chalky soil it dies.

Firs succeed best on the north and east sides of hills, growing there faster and taller; the grain of the wood is also more compact and the trees fuller of sap.

2. INCREASED.

a. By seed—May be planted by two cuts of a spade made thus >, the angle raised to put the seed under it, and the sod then pressed down. If the ground is stony a dibble may be used; and if it is moss, or clay, which is apt to shrink with drought, an instrument like a gouge, or borer, is used to cut a round hole—the seed to be planted from one to two inches deep.—To procure the seed, expose the cone to a gentle heat, or soak it for twelve hours in warm water.

b. By slips twisted.

3. TREE.

- a.* In a grove the trunk becomes tall and naked; in sunny open places, branched; which makes the wood knotty. They should, therefore, be close pruned to a reasonable height while the branches are small, not all at once, but from time to time.
- b.* Should not exceed four years old before they are planted, having been before transplanted; if the tap root is broken off the stem ceases to shoot upwards, and the tree for ever remains a dwarf.
- c.* The wood of this tree, naturally sown, is greatly superior to that of transplanted trees: Some of the former, after it had been above 300 years in the roof of an old castle (Castle Kilchurn, in Glenarchy) was as fresh, and full of sap, as newly imported Memel; and part of it was actually wrought up into new furniture.
- d.* Are liable to be destroyed by Squirrels, who bark the tree all round; all above it dies, and generally is broken off by the first high wind: And by Hares, (those great destroyers of all young plantations). They may be drawn from them by sowing Liburnum, the young shoots of which they prefer to the firs.
- e.* Grows sometimes to twelve feet in circumference, and near 60 feet high.

4. USE.

- a.* This tree furnishes us with the best red or yellow deal, which is applicable to numberless purposes, as for masts, flooring, wainscot, tables, boxes, &c. It is stained to imitate mahogany with a red clay, found at Apefdown, near Newport, in the Isle of Wight.
- b.* From the trunk and branches of this, as well as most others of the pine tribe, tar and pitch is obtained.—By incision, barras, Burgundy pitch, and turpentine, are acquired and prepared.
- c.* The roots divided into small splinters, are used in many parts of the Highlands of Scotland, to burn instead of candles; the Laplanders make ropes of them, and also sew with them the thin planks of fir, of which their portable boats are made.

- d.* The bark will tan leather; and ropes are made of the inner bark, by fishermen, at Lock-Broom, in Ross-shire. In times of scarcity the *Norwegians* grind the bark, and mixing it with a little oatmeal, make bread of it.
- e.* The tender shoots are an excellent substitute for fodder for cattle in hard winters.
- f.* From the cones is prepared a diuretic oil, like the oil of turpentine, and a resinous extract, which has similar virtues with the balsam of *Peru*.
- g.* An infusion or tea of the buds is highly commended as an antiscorbutic.

Culture, &c. of the Spruce Fir.

1. SOIL.

- a.* Succeeds on the hard dry rock; but frequently decays at the end of 18 or 20 years on stiff wet clay, and on sandy heathy ground; its most favourite soil is that which is dry and gravelly.
- b.* Succeeds on a loamy soil.

2. TREE.

- a.* Should be planted as it stood before, *i. e.* the side which formerly faced the south, to be placed again in the same direction. The leading shoot in summer has measured 3 feet in height.
- b.* The wood is very light, white, and rots in the air.
- c.* There are two sorts of this tree, viz. the white and the black spruce.

3. USE.

- a.* Musical instruments, packing boxes, &c. are made of the wood.
- b.* The branches are used in making spruce-beer.
- c.* A fine clear turpentine, of a strong scent, oozes from this tree, with which the Indians of North America are said to cure green wounds, and some internal disorders—that particularly of the white, is affirmed to be a sovereign remedy in fevers, and pains of the breast and stomach.

Culture, &c. of the Yew-leaved or Silver Fir.

1. SOIL.

- a.* Requires a dry deepish soil and protection from the north wind.

2. TREE.

- a. The wood is white and soft, and therefore not greatly esteemed.
- b. Has grown, in between 70 and 80 years after planting, to more than 12 feet in circumference.

3. USE.

- a. The Strasburgh turpentine is drawn from this tree.
- b. In a trial of several sorts of firs to make hedges with on the Pyrenees, none answered so well as this, forming rather a living wall, than a common fence.—It would probably answer for the same purpose in the Highlands of Scotland, and in North Wales.
- c. In Finmark they cut the tops of the branches, mix them with oats, and give them to their horses in time of scarcity.

Fir wood found buried in bogs in Ireland, is sometimes beaten into strings, combed and spun, and several strings are twisted together to make ropes; which have this particular excellence, that being used for cording of beds on damp floors, they are not subject to rot, as the hempen cords are, by moisture.

POND FISH.

- 1. *Carp* (*Cyprius Carpio*) will not thrive in a cold hungry water, but requires a pond with a fat rich soil at bottom; the best size for the table is about 18 inches, but will grow to 2 feet 6; spawns throughout the summer, and are such prodigious breeders, that 203,109 roe have been found in one fish; frequently mixes its spawn and roe with those of the Tench and Bream, and produces a mongrel breed—Its food is worms, grubs, insects, berries, and grass.
- 2. *Tench* (*C. Trinca*). The pond should have a muddy bottom with weeds; succeed also in clay pits; seldom exceeds 4 or 5 lbs. Spawns about the beginning of July, and are in season from early in September to the end of May. Their food the same as that of the Carp, and are frequently kept in the same pond.
- 3. *Perch* (*Perca Fluviatilis*) like a clear and moderately deep water, with a pebbly, gravelly, or a sandy clay-

ey bottom; spawns the beginning of March; is a delicate and firm fish; feeds on frogs, worms, and small fish (even those of its own species), and is often put into carp ponds, when too full of fry, to thin them.

4. *Crucian* (*C. Carassius*.) This fish was brought from Germany by mistake instead of a better, which goes by the same name; it is not uncommon in ponds near London, and in the south of England; the meat is coarse and little esteemed.

The *Pike* and *Carp* are also both supposed to be naturalized fish; the first being said to have been brought from Spain, the latter from Germany.

5. *Gold and Silver Fish*—As this fish thrives and propagates in ponds, it is proposed to rear them in preference to *carp*; on account of their possessing a finer flavour, and being much better calculated for the table, than the common *carp*.

This is a native of China, where it is called *Kamniko*, is there kept in glass bowls, and fed with a species of plant.

6. *Pike*. (*Esox Lucius*.) The pond for this fish should be of a good depth, with weeds growing in it; spawns in March or April: When in high season their colours are very fine, being green spotted with bright yellow, and the gills of a most vivid and full red; feeds on frogs, young ducks, and water rats, and also on fish, even of their own species—To prevent their destroying each other, they should be put into the pond all of the same size.

7. *Eels* (*Muræna Anguilla*) never breed in perfect standing water; thrive in moats which have the sink of a house draining into them.

8. *Bream* (*C. Brema*). *Roach* (*C. Rutilus*). *Dace* (*C. Lenciscus*); and *Minnows* (*C. Phoxinus*); being great breeders, are kept in ponds with *Pike* and *Perch*, as food for them.

We have two other kinds of fresh water fish that would be worth trying to breed in ponds, viz. (1.) The *Ruff* or *Pope* (*P. Cernua*), which is much like the *Perch*, but esteemed better eating; and (2.) The *Gudgeon* (*C. Gobio*), which is reputed almost equal in

goodness to the delicate Smelt. (*Salmo Eperlanus.*)—
The Gudgeon delights in a gravelly bottom.

FLAX. (*Linum Usitatissimum.*)

Culture, &c.

1. SOIL.

- a.* New broke up ground reckoned the best—If not sown more than once in six years it is supposed not to exhaust the land.

2. SEED.

- a.* The best imported from Riga—Of late much has been imported from New York and Philadelphia.—The Dutch seed is observed to produce the finest flax.
Should not be sown more than three years without changing; some change every year.
b. Sown in April and beginning of May.
c. From two bushels, to two bushels and a half; sown broad-cast per acre.
d. Clover often sown with it.

3. PLANT.

- a.* When weeded should be trod as little as possible.
b. Ripe when in full blossom.

But if intended for seed, not till the leaf drops, and the milky juice of it is dried up. The flax from plants that have seeded, is very inferior to that pulled up when in blossom; and is distinguished by the name of *seed-line*.

4. HOW PREPARED FOR THE MANUFACTURER.

- a.* By *Rating*, *i. e.* steeping it in water, in order to loosen the rind, and separate it from the stalk.

The early flax is mostly watered, which is done by laying the bundles in a pond or reservoir of soft water, and keeping them down by stones, or any other heavy bodies; in the course of seven or eight days the rind will be sufficiently loosened, and they must be taken out of the water, spread abroad, and dried. In this part of the operation great skill and attention are necessary; for if it be left in the water too long, the threads become rotten, and useless to the manufacturer; it is therefore more advisable to take it out *too soon*, than to leave it *too long* in the pits; which has the same effect

in drawing the oil from the Flax, as ripening the seed has.

b. By *Dew ripening*, which is spreading it on grass land, and by rain and dew producing the same effect as *rating*.

c. Those who raise flax for the seed and stalk both go through an operation called *Ripling*; this is separating the seed from the stalk, by passing the flax through a kind of comb before it is watered. These combs are made of iron, and the teeth are so close, that the heads cannot pass through, and are consequently pulled off.

Others beat the seed out in the field where it grew, by a piece of wood on a stick, (more heavy than the common flail) and the seed is sifted clean into a large sheet.

4. USE.

a. For making linen.

The coarse tow is used for making wicks of candles.

b. From the inferior seed, not good enough to be sown, an oil is extracted, by its being first bruised in a mill, and then put into hair cloths, and pressed by a heavy weight. This oil is used by painters—an inferior oil is afterwards got by heating and pressing again.

c. The husks of the seed (called oil cakes) after the oil is drawn out, is much esteemed for feeding cattle.

d. The seed is used for feeding cattle, by boiling it, or first bruising it and steeping it in hot water, which makes a sort of faloop; and where malt grains can be had to mix with it, the food is of a very nourishing quality—Given dry or steeped answers exceeding well.

e. In its green state, immediately after the seed has been taken from it, it forms an excellent covering for houses, to be surpassed by few others. It should be put on in a new state, and sewed together with a cord well impregnated with tar. In a short time it will throw out a glutinous matter, make the contiguous stalks adhere to each other, and form a solid body, impervious to the elements; neither sun, wind, nor rain having any power to affect it.

f. It is observable, that the land on which rated flax is spread to prepare it for housing, is greatly improved

thereby; and if it be spread on a coarse sown pasture, the herbage will be totally changed, and the best sort of grasses will make their appearance—Nay, the water in which the flax is immersed, will, if sprinkled on land by means of watering carts, produce an astonishing effect; and advance the land in value ten shillings or fifteen shillings per acre. If suffered to run into rivulets, it becomes a nuisance, poisoning the fish.

Potatoe haulms spread on grass will produce nearly the same effect.

This valuable plant came originally from Egypt—The Egyptian linen is not so thick as ours, is softer, and of a looser texture; for which reason it does not wear out so soon as ours, which frequently wears out the faster on account of its stiffness.

" FLAXSEED-JELLY.

" Is introduced in fattening cattle, in lieu of *oil-cake*, now become scarce and dear. The husbandman should look into the valuable properties of this article as food in fattening, and attend to its effects."

" FLOORS.

" Cement on strong, narrow boards, 3 or 4 inches thick, or on the solid ground, makes the wholesomest and best floors in country habitations."

FOAL.

Should be weaned before November; fed all winter with a little corn twice a day, or carrots, with hay, oat-straw, &c. and allowed a well-littered shed, or warm straw yard.

FOGGING.

The shutting up of pastures from cattle from May to December; or from June to March.—See Pasture (4.)

FRUIT. (See, *post*, Orchard.)

FUEL.

Prepared by the farmer and cottager, as a substitute for coals and wood.

1. Peat.—There is no great difficulty in the mode of preparing it: In the month of May or June it is cut out with a keen instrument into the shape of bricks, left single on the ground for a few days to dry, by which time they lose part of their moisture, and become firm enough for piling in pyramidal heaps, of about a waggon load each; in this state they are compleatly dried.—Though the ouer covering or sward of this boggy land will burn, yet it is not much esteemed as fuel, being soon consumed——Peat makes a clean and pleasant fire, particularly well adapted to the purposes of the dairy.

2. A mixture of loamy clay, and such small coal as will pass through a pretty wide riddle or sieve, tempered together like mortar, and formed either into balls, dried in the sun, or under a shed; these balls are either burnt in a grate, or piled on a hearth, in form of a cone, with a cylinder shape hollow within, and a small hole like that of a bee-hive at bottom; a kindling of coals is to be thrown into the hollow, and the kettle slung over the top.—Some, instead of balls, build the cone with the mortar 6 or 7 inches thick at bottom, and about 5 at top, a few sticks are put into the hollow, and lighted through the hole at bottom. One of these will last a fortnight, if only used for the occasional purpose of dressing victuals—The expense will not exceed six-pence.

In Holland they add moss (a friable kind of peat) to the clay and coal, and mould it into the shape of bricks; of these they put on a great quantity at a time, built with air-holes passing through them; and they make a powerful and lasting heat—They only use the refuse of the coals they import from England for the purpose, and apply the coals themselves to the use of manufactures.

FURROW.

"The hollow or drain in land left by the plough."

The breadth of each furrow should *not be less than 7 inches, nor more than 9*, in any case, except sowing under furrow; in that case 5 inches will be a sufficient

breadth; and the proper rule or proportion for the thickness or depth of the furrow is never to exceed two-thirds of its breadth; therefore, if the furrow is too narrow, the depth will be but trifling. The fin of the share ought to cut under nearly the breadth of the furrow, particularly in strong rushy ground, otherwise the resistance of the uncut part will require a strong purchase to wrest it to its place.

FURZE. (*Ulex Europæa*.)

Culture, &c. of Common Furze.

1. SOIL.

a. Will grow in a light dry soil; but the better the land the longer the shoot will be.

2. SEED.

a. Sown in February, March, April, or early in May.

b. Six pound to an acre; the land to be managed the same way as for sowing grass—to be sown either alone or with barley, oats, or buck-wheat.

c. Drilled so that each plant may stand about a foot or 18 inches asunder.

d. In order to save Furze seed when it is ripe, the plants must be sheared, and the part cut off must be dried in the shade, and afterwards threshed and dressed. In some places women are employed to gather the seeds.

3. PLANT.

a. Mowed the year after sowing, beginning in October or sooner, will continue to grow till Christmas, and be fit for use till March.

b. Will last several years; only what is the growth of a year is to be cut, and at a time no more than will last one or two days at most after being bruised.

c. One acre will produce from ten to fifteen tons, which will go as far as the same quantity of hay. In some places it is stacked.

d. Should be cut for fuel only once in four or five years.

e. Young plants, or even slips, planted in spring or October, will readily grow—For hedges they should be planted in rows 10 or 20 inches above one another, on the slope of the bank—Banks for Furze should be about 4 feet high, and 4 or 6 broad.

4. HOW BRUISED.

a. With a machine of the following construction—It consists of a large circular stone, set on its edge (the weightier and bigger the better) with a wooden axis passing through its centre. One end of this axis is fixed upon a pivot, placed in the centre of a circular area, and to the other end of it is fixed a yoke, to which the horse who is to move it is attached. The stone being placed on its edge, when the horse moves, it revolves round its axis in a circular groove, or stone trough, (this trough should be made of hewn stone) exactly in the same manner as a sugar-baker's or tanner's mill. The whins being placed in this trough, are bruised by the weight of the stone as it passes over them, and being raised up by a three-pronged fork by the attendant, after they have been well flatted down, they rise in a sort of matted cake, which, being set in some measure upon its edge, is again smashed down by the wheel as it revolves round. In this way the operation is continued, by successively presenting new surfaces to the action of the wheel, till the whole is reduced to a soft pulpy mass, that can easily be eaten by the animals. During the continuance of this process it is necessary to pour plenty of water upon the furze at different times, without the help of which, they can scarcely be reduced to a pulp soft enough. Mills for grinding apples, or expressing oil, will also do to bruise furze.

Some people add chopped straw; 100 of straw will serve for a ton of furze.

b. Poor cottagers only break the prickles, by beating them with large mallets, on blocks of wood; in this state they give it to the cattle, which eat it heartily.

c. An instrument used in Wales for this purpose is of the simplest construction, consisting of a square log of wood with a handle, in which are inserted two sharp blades, intersecting at right angles. It is made to work by either man, horse, or water—A man will cut as much in two hours as will feed seven horses for a day.

It has been improved in Dublin by making the wheels of cast metal instead of wood.

5. USE.

a. Bruised it affords food for horses, who eat it as readily as hay; cows also that are fed upon it, yield nearly as much milk as while upon grass, which is free from any bad taste.

b. Goats and sheep also feed upon the tender tops.

The tops gathered free from rain or dew are said to have a most grateful smell, superior to any green tea, and used like tea, are scarcely less grateful, and probably more wholesome.

c. Often employed as a fence when sown upon the top of a bank.—Will thus form a fence upon the bleakest mountains, and close to the sea side.

d. On Lord Ashburnham's Carmarthen estate, an embankment was effected by the simple process of a furze hedge, $7\frac{1}{2}$ feet high; which served, like the groins on other parts of the coast, to collect a body of sand equal to its height, and so to break the force of the sea, and prevent its depredations on the shore.

e. Used for heating ovens, which it does very soon, burning rapidly and with a great degree of heat. The ashes are used to make lye.

Culture, &c. of French Furze.

1. SOIL.

a. Will thrive on a poor sandy soil.

2. PLANT.

a. Cut every third year in the month of February.

The instruments should be good, and applied as close to the ground as possible, and the stem of the furze cut clean off, with the edge of the tool turning upwards.

b. An acre will give 4840 faggots.

French Furze appears to differ only from the common Furze, in being of a taller growth, rising with room and a good soil, to 10 feet high.

GOATS.

1. Marshall, in his work entitled the Rural Economy of Gloucestershire, mentions a Mr. W. Peacey of

Northleach, who, having lost several horses in the staggers, was advised by a friend, whose experience had led him to believe, that he had benefited much by what he recommended—to keep a he-goat in his stables. He got one, and had not for many years another instance of the disorder; but the goat dying, his horses again became afflicted with this alarming disorder. He procured another goat (which is still living) and has not since had an instance of the staggers. He has seldom less than 20 horses in his stables.

The influence of the goat is not merely that of a charm; the staggers appear, evidently, to be a nervous disorder. Odours are found in many cases, I believe, to act beneficially on the human nerves; and probably the strong scent of the goat may have a similar effect on those of the horse.

2. In Northumberland they have generally a few goats mixed with sheep, for the health of the flock; as it is known they eat, with safety, plants which to other animals would be poison.
3. Large flocks of goats are kept on Snowden for the dairy, and regularly milked.

GOLD OF PLEASURE. (*Myagrum Sativum*.)

This plant is frequently found as a weed among Flax: In Germany it is cultivated for the sake of the expressed oil of the seeds, which the inhabitants use for medicinal, culinary, and œconomical purposes.—The seeds are favourite food with Geese.

GOOSE.

1. Chinese G. (*Anas Cynoides*.) This is easily distinguished from other geese, by a large knob on the forehead, and a wattle beneath the throat.

It is frequently kept in England, and readily breeds with the common geese—Is called by many the *Swan Goose*.

2. Canada G. (*A. Canadensis*.) This is bigger than the common G. from which it may readily be known, by the head and neck being black, with a broad white band like a crescent under the throat.

This is frequently kept as an ornament to pieces of water, where it breeds freely; the young birds are accounted good, and the feathers are equal in goodness to those of other geese.

3. Egyptian G. (*A. Ægyptiaca*.) Size of the common G. On each side of the head a large rufous spot, in the middle of which the eyes are placed.

Not uncommon on Gentlemens' ponds in many parts of this kingdom, being an admired and beautiful species.

4. Cape of Good Hope G. Less than the common G. neck proportionably longer; on the forehead of the gander a small knob; plumage white; grows very fat—This is sometimes to be met with near London in poultry yards; and are brought from the Cape by homeward bound East India ships.

5. Brent G. (*A. Bernicle*.) This is one kind of our wild G. but is easily tamed, and, being fattened, are thought to be a delicate food—Feeds on plants, as the small Bistort (*Polygonum viviparum*), black-berried Heath (*Empetrum nigrum*), &c.

6. Common G. (*A. Anser*.) Breeds in general only once in a year, but will frequently have two hatches in a season, if well kept; the time of sitting is about 30 days. They will produce eggs sufficient for three broods, if they are taken away in succession. One gander to five geese—The goose carrying straw in her bill, is a sign she is about to lay—the goslings not to be sent out to graze too early, and always fed before turning out, lest they wander beyond their strength. Besides corn, feeds on grass, cabbage and lettuce leaves, and chopped Cives (*Gallium Aparine*.)—For the sake of their quills and feathers, they are stripped while alive, once in a year for the first, and no less than five times for the last: the first plucking is about *Lady-Day*, for both quills and feathers; the other four between that and Michaelmas, for feathers only; in general the birds are not considerable sufferers, though sometimes, if the cold weather should come on, numbers die in consequence.

GOOSEBERRY. (*Ribes Grossularia*.)

Var. In the size and colour of the fruit, as red, deep red or nearly black, yellow, white and green; of these some sorts are smooth, others hairy.

We are indebted to a society in Lancashire for the great varieties we have of this fruit, in having given a *premium* for several years, for raising of curious new sorts, remarkable for size and flavour. Their catalogue contained 83 kinds.

Culture, &c.

1. SOIL.

a. Thrive best in a light dry soil; and free from the shade of trees.

2. INCREASED.

a. By seed, for new varieties.

b. By suckers; or, which form better root, cuttings; these should be 6 inches long, planted 3 inches deep and 6 inches apart, the time either January, February, or Autumn. In the year following they are to be planted in rows 3 feet distant, and 1 foot asunder, the roots to be trimmed, and during their growth (from first planting) all buds and shoots below the head are to be taken off.

c. When several stems arise from the same root they may be divided into single plants.

3. TREE.

a. Transplanted in February will bear the same year.

b. Three years old the best age for last transplanting. The distance of the rows 8 feet, and the trees 6 feet asunder.

It is the practice of gardeners near London to manure and dig between the rows, planting it with coleworts for winter and spring use; in hard winters these often escape, when those which are planted in an open enclosure are destroyed; in spring and summer spinage, beans or potatoes are raised between them.

c. In November cut any cross-placed or crowded branches, and dead wood; and the superfluous lateral shoots, except in vacancies, leaving a leader to each mother branch, shortened moderately or not at all.

d. To free from insects : Take a Scot's pint of tobacco liquor, which the manufacturers of tobacco generally sell for destroying bugs, and mix therewith about 1 oz. of allum; and when the allum is sufficiently dissolved, put this mixture into a plate or vessel, wide and long enough to admit of a brush, and by drawing your hand gently over the hairs of the brush, sprinkle the above liquor on the under sides of the leaves.

4. USE.

- a. The fruit; either green, ripe, preserved, or made into wine.
- b. It has been proposed to plant it for hedges—Gardeners near London frequently make up dead hedges, with the old trees.

GOURD.

- 1. Long Gourd. (*Cucurbita Lagenaria.*)
 - 2. Warted Gourd. (*C. Melopepo.*)
 - 3. Chinese Gourd—Fruit smooth, roundish, yellow.
- Culture, &c.*

1. PLANT.

- a. The culture of the Gourds is the same as that of the Pumpkin; except that the lesser varieties require being trained up south walls, palings, arbours or poles.

2. USE.

- a. The long Gourds if gathered young, while the skins are tender, and boiled have an agreeable flavour: In the eastern countries they boil it, and season it with vinegar; or fill the shell with rice, and meat, and thus make a pudding; the rind of the ripe fruit, when the seeds and pulp are taken out, is used to hold water.
- b. The warted Gourd is commonly gathered when they are half grown, and boiled by the inhabitants of America, to eat as sauce with their meat. "They are the *Cimblin* of Maryland, the *Squash* of Pennsylvania."
- c. The Chinese Gourd, which appears to be equally hardy as the long Gourd; is brought from China by the East India Company ships; the pulp is eaten either

dressed like mashed turneps, or made into a pie with the juice of a lemon, and is then compared to apples for taste.

GRAFTING.

Is the taking a shoot from one tree and inserting it into another, in such a manner, as that both may unite closely, and become one tree : Its use is to propagate any curious sorts of fruit so as to be certain of the kinds, which cannot be done by any other method ; it also renders exotic trees hardy enough to endure the cold of our climate in the open air.

1. Grafts or Cions, and Stocks.

- a.* Grafts should be shoots of the former year ; of healthy fruit trees ; and from lateral or horizontal branches.
- b.* As the grafts should be cut off from the trees before their buds begin to swell, which is generally three weeks or a month before the season for grafting ; they must be buried in the ground half their length, and their tops covered with dry litter ; if a small joint of the former year's wood is cut off with the cion it will preserve it the better.

If the cions are to be carried to a considerable distance it will be proper to put their cut-ends into a lump of clay, and to wrap them up in moss ; which will preserve them fresh for a month or longer.

- c.* The best grafts are from trees raised from seed ; next those raised from cuttings ; but those of trees raised from suckers should be rejected.
- d.* The best stocks are such as have been allowed much room in the nursery ; those planted very close have the wood soft ; and the grafts on them, though they shoot strong, are not fruitful.

2. Necessary tools for grafting.

- a.* A neat small hand saw, to cut off the heads of large stocks.
- b.* A good strong knife with a thick back, to make clefts in the stocks.
- c.* A sharp penknife to cut the grafts.
- d.* A grafting chissel and a small mallet.

- e. Bafs strings, or woollen yarn, to tie the grafts with.
- f. A quantity of clay or mummy—See Grafting-Clay for the method of preparing it; and also Mummy.

3. Kinds of Grafting.

- a. Crown-grafting, Shoulder-grafting, or grafting in the rind.
- b. Cleft-grafting, called also Stock or Slit-grafting. (See page 78.)

The Chinese when they ingraft do not slit the stock as we do, but cut a small slice off the outside of the stock, to which they apply the graft, (being cut sloping on one side, agreeable to the slice cut from the stock), and bringing up the bark of the slice upon the outside of the graft, they tie all together, covering with straw and mud as we do.

- c. Whip-grafting, which is called also Tongue-grafting.
- d. Grafting by approach, or ablactation; this is also called *Inarching*, which see.
- e. Root-grafting.
- f. Budding or Inoculation.
- g. Escutchen-grafting.
- h. Terebration, or boring of trees.

See the different articles, for the method of performing them.

- 4. What trees will take, and thrive upon each other.
- a. Nut-bearing trees may be grafted upon each other.
- b. Plumb-bearing trees; under this head is to be reckoned the Almond, Peach, Nectarine, Apricot, &c.

As these trees are very subject to emit large quantities of gum from those parts where they are deeply cut and wounded; in the tender trees of this kind, viz. Peaches and Nectarines, (which are most subject to it) it is found to be the surest method, to bud or inoculate.

- c. Cone-bearing, as the Fir, Larch, Cedar, &c.

These must be grafted by approach, for they abound with a great quantity of resin, which is apt to evaporate from the graft, if separated from the trees before it is joined with the stock, whereby they are often destroyed.

- d. Mast-bearing trees.

Those with a tender soft wood will take upon each other; but those of a firm texture, and slow of growth, should be grafted by approach.

The curious furnish us with several extraordinary instances of *engrafting*; as of apples on the plane, elder, thorn, cabbage-stalk, &c. and the like of pears, &c. pears on apple trees, elms; &c. cherries on the laurel, coral-berries on the plumb; beach on the chestnut, oak on the elm, gooseberry on the currant, the vine on the cherry-tree, &c.

GIN-SENG. (*Panax Quinquefolium.*)

Culture, &c.

1. SEED.

a. Though the flowers are hermaphrodites and ripen to appearance their seeds, no effort made either in China or England, could make them grow in a garden. The Chinese say the seeds pass through a bird, like mistletoe berries through a Thrush.

2. PLANT.

a. This is a native of China and North America, but has been introduced into English gardens, and in a shady situation and light soil, the plants have thriven, produced flowers, and ripened their seeds.

b. Grows naturally on rocky mountains, and near the roots of trees.

3. USE,

a. The root is so valued in China as to sell for its weight in silver: The physicians there have written whole volumes on its virtues; which appear principally to be thinning the blood, making it circulate, and warming it; and that it sensibly strengthens.

b. The leaves used instead of Tea—The colour of it is no less agreeable; and when taken two or three times, it has a taste and flavour which are very pleasant.

The leaves possess the virtues of the root.

Our physicians depreciate the virtues of this plant so much, that notwithstanding it has found a place in our dispensatory, yet, it is not mentioned in the Pharmacopœia of the London College.

" Daniel Preston of Maryland, well known on Dover creek, Harford county, had an *asthma* from his childhood: Being a land surveyor it became a habit to chew of this plant in the woods, till, unexpectedly, he was considerably better of the disease; and he then made it a practice to drink of the leaves and roots in a tea. At about 60 he had been from 15 to 20 years perfectly cured of all complaints."

GRAM.

1. East India Gram. Grows about 15 inches high, but spreads without trailing near 3 feet; has a red pea flower, which is succeeded by a pod containing only a single seed; but the produce is great, as there are as many pods as leaves, which are like those of Burnet: Being a very hardy plant the seed should be sown early in March, or even sooner.

The seeds which are of a deep red colour, and of the size of a pea, are used to feed pigs and poultry—Our East India ships bring home long slender poles of very hard wood, which they call Gram sticks.

2. Spanish Gram or Caravanse Pea. This was sown late in the spring, and grew very well till dry hot weather set in, when it withered and died; but not before it had ripened a few seeds. It differs principally from the above in the seed, which is of the colour and size of a marrowfat pea.

The seeds are reckoned more wholesome in soups than those of the common pea.—The plant is eaten by cows.

" It is a desirable plant for *America*."

GRASSES.

CULTIVATED GRASSES.

1. Ray-Grass. (*Lolium Perenne*.)
2. Yorkshire-Grass. (*Holcus Lanatus*.)
3. Sweet-scented Vernal Grass. (*Anthoxanthum Odoratatum*.)
4. Meadow Fox-tail Grass. (*Alopecurus Pratensis*.)
5. Smooth-stalked Meadow Grass. (*Poa Pratensis*.)
6. Rough-stalked Meadow Grass. (*Poa Trivialis*.)
7. Meadow Fescue-Grass. (*Festuca Pratensis*.)

8. Crested Dog's-tail-Grass. (*Cynosurus Cristatus*.)

The seeds of the last six grasses were first collected by the late Mr. Curtis; and are still to be bought at the Botanic Nursery, Brompton; and at No. 3, St. George's-Crescent, Black-Friar's-Road.

9. Timothy-Grass. (*Phelum Pratense*.)10. Oat Grass. (*Bromus Mollis*.) Cultivated in Staffordshire.*Culture, &c. of Ray-grass.*

1. SOIL.

- a. Suits a stony soil.
- b. Attains amazing perfection upon bogs properly prepared; where it has grown 6 feet in length.

If sown repeatedly on the same land it degenerates. The original kind produces a white stalk and seed, and is a perennial grass; the degenerate kind has a purple stalk and a blackish seed, and almost becomes an annual.

2. SEED.

- a. Mixed with clover seed and sown with barley or oats.
- b. Sown with clover and narrow-leaved plantain.

One reason for sowing it with clover is, to preserve the sheep and cows from hoving.

3. PLANT.

- a. Is a very indifferent grass for pasture, on account of the tendency it has to send out numerous seed-stalks very early in the season, after which no animal will taste it: moreover it dies out entirely, in five or six years.

4. USE.

- a. For pasture and hay.

The hay does not effect horses wind like the hay of other grasses.

Culture, &c. of Yorkshire-Grass, or White Hay Seed.

1. SOIL.

- a. This grass is excellently adapted for mossy soils; it spreads quickly and keeps the ground warm.

2. SEED.

- a. Sown with oats instead of ray-grass.

3. USE.

- a. Is good fodder for cattle, but not so good for horses.

Culture, &c. of Sweet-scented Vernal-Grass.

1. SOIL.

- a.* Grows readily in all kinds of soils and situations.

2. SEED.

- a.* Not very productive in seed which ripens in April.

3. PLANT.

- a.* In certain situations, and more especially in dry seasons, the leaves of this grass are apt to be blighted, from a disease which changes them to an orange hue, and which proves highly injurious to them.

- b.* The agreeable scent of new-made hay arises entirely from this grass. The green leaves, when bruised, readily impart this perfume to the fingers, by which means this grass may at all times be known.

4. USE.

- a.* Cattle are fond of it.

Culture, &c. of Meadow Fox-tail Grass.

1. SOIL.

- a.* Grows naturally in a moist soil only.

- b.* The best grass to sow on boggy places that have been drained.

2. SEED.

- a.* Ripens early and is easily collected.

In certain seasons the seeds are destroyed by a very minute orange coloured larva or maggot.

3. PLANT.

- a.* Is of quick growth and shoots very rapidly after mowing, producing a very plentiful *aftermath*; and where the land is rich and two crops are not thought too much for it to bear; of all our English grasses this appears to be the best adapted for such a purpose, and ought to form a principal part of the crop.

- b.* Is the earliest of the common meadow grasses, and furnishes the greatest quantity of hay.

4. USE.

- a.* It is esteemed a good grass for hay; and is one of the first dairy grasses.

Culture, &c. of Smooth-stalked Meadow Grass.

1. SOIL.

- a.* This grass rather affects a dry than a moist situation, and hence it keeps its verdure in long continued dry

weather better than most others, but will thrive in either.

2. SEED.

- a. Throws up its flowering stems but once in a season, viz. in May.

From this peculiarity, joined to its hardness and verdure, it would appear to be a good grass for lawns or grass plats.

3. PLANT.

- a. The root creeps like the couch-grass, and is almost as difficult to extirpate; it ought, therefore, to be cautiously introduced where the pasturage is not intended to be permanent.
- b. Where early grass pasturage is a desideratum, it is supposed it cannot be better obtained, than by a combination of this and the two former grasses; if a crop be at the same time an object, the Meadow Fox-tail Grass should predominate.

4. USE.

- a. Is esteemed among our best grasses for hay.

In dry soils the crop from this grass has been found yearly to diminish in quantity, and to be at last very trifling, when its roots are matted together and have exhausted the ground, which they seem very apt to do; in moist meadows this effect has not been so observable. This circumstance lessens the value of this grass.

Culture, &c. of the Rough-stalked Meadow-Grass.

1. SOIL.

- a. Requires a moist soil, and a situation that is sheltered. Hence, though there are few grasses more productive, or better adapted for hay or pasturage, it is a tender grass, and liable to be injured by severe cold, or excessive drought.

2. SEED.

- a. Is apt to be entangled, as if cobwebs had been intermixed with them, which makes it difficult to disperse them evenly in sowing; the same happens with the Smooth-stalked Meadow-Grass.

3. PLANT.

- a. This is a principal grass in that uncommonly productive meadow at Madington, in Wiltshire; besides

which, are found growing there, equally luxuriantly, Couch-Grass, (*Triticum Repens.*) *Agrostis Palustris*, *Alba*? Meadow Fox-tail Grass, (*Alopecurus Pratensis.*) Tall Oat, (*Avena Elatior.*) Flote Fescue-Grass, (*Festuca Fluitans.*) Meadow Saxifrage, (*Peucedanum Silaus.*) Upright Meadow Crowfoot, (*Ranunculus Acris.*) &c. The soil of this meadow owes its fertility to being over-run by streams of water from the streets of Tilshead (about three miles distant) and the farm yard; it gives four crops in the year; and fattens hogs, which is imputed to the Couch Grass.

Some of the above grasses are said to grow 25 feet long, throwing out roots at the joints of the stalks, about 18 inches high; and gives about five tons per acre the first mowing, and about two the second; though sometimes considerably more: Two crops is all the field gives according to one account, where the place is called Orcheston St. Mary, and said to be about nine miles from Salisbury—The crops of late years have not by any means equalled what they have heretofore been.

Culture, &c. of Meadow Fescue-Grass.

1. SOIL.

- a.* Will thrive not only in very wet, but also in dry ground.

2. SEED.

- a.* Produces its flowing stems about the middle of June.

One quality this grass has which bids fair to introduce it quickly into more general use, viz. its producing much seed, which is easily gathered, and readily grows.

3. PLANT.

- a.* Has much the appearance of the Ray-Grass, to which, however, it seems in many respects greatly superior, at least for the purposes of forming or improving meadows; it is larger and more productive of foliage; it is strictly perennial, and very hardy.

Culture, &c. of Crested Dogs-tail Grass.

1. SOIL.

- a.* Grows naturally in dry situations and will not thrive in meadows that are wet.

2. SEED.

- a. Flowers about the middle of June.—As the flowering stems and heads are always left untouched by cattle, its seeds may easily be collected where the pasture is fed.

3. PLANT.

- a. Produces but little foliage; its stems are wiry, and constantly refused by cattle: this, with its root being fibrous, and penetrating to no great depth, and its becoming in dry summers little better than an annual, makes its intrinsic merit inferior to the five former grasses.

4. USE.

- a. Is recommended from being a favourite and wholesome food for sheep and deer; and being found in our soundest and best pastures.

Mr. Curtis points out the latter end of August, or beginning of September, for sowing grass seed: and the following composition, sown broad-cast, to form a meadow or pasture.

Meadow Fox-tail, one pint; *Meadow Fescue*, ditto; *Smooth-stalked Meadow*, half a pint; *Rough-stalked Meadow*, ditto; *Crested Dogs-tail*, a quarter of a pint; *Sweet-scented Vernal*, ditto; *Dutch Clover* (*Trifolium Ripens*) half a pint; *Wild Red Clover* (*Trifolium Pratense*), or in its stead, *Broad Clover* of the shops, ditto. For wet land, the *Crested Dogs-tail* and *Smooth-stalked Meadow* may be omitted, especially the former.

Such a composition as this, sown in the proportion of about three bushels to an acre, on a suitable soil, in a favourable situation, will form in two years a most excellent meadow, the land being before well cleared of all other plants.

USEFUL UNCULTIVATED GRASSES.

1. *Reed Meadow-Grass*. (*Poa Aquatica*.) Grows in the fens of Ely 6 feet high, usually cut when about 4 feet, when dry, is bound in sheaves; it generally undergoes a heat in the rick, which improves it. It is excellent for milch cows; horses are not fond of it. Is called White-lead, from drying of a white colour. Said to be cultivated in the Isle of Ely.

2. *Water Hair-Grass*. (*Aira Aquatica*.) Cannot be cultivated, as it must have water to grow in. This grass contributes greatly to the sweetness of Cottenham cheese, and to the firmness of Cambridge butter.
3. *Blue Hair-Grass*. (*Aira Cærulea*.) Is made into befoams.
4. *Sheep Fescue-Grass*. (*Festuca Ovina*.) Is the favourite food of sheep; they prefer it before all other grasses, and soonest grow fat upon it. The Tartars, who lead a wandering life, tending their flock and herds, always choose those spots where this grass abounds.—Is not the superiority of the Spanish and English wool owing to the abundance of this grass in the hilly pastures where the sheep are kept? *Withering*.
5. *Hardish Fescue-Grass*. (*Festuca Luriuscula*.) Worthy of all cultivation; it affords rich pasture, and makes the finest hay—grows 3 or 4 feet high.
6. *Marsh Meadow-Grass*. (*Poa Palustris*.) A fine exuberant grass; perhaps the very best dairy grass. Supposed to be an excellent grass for laying down spongy ground.
7. *White Meadows-Grass*. (*Poa Annua, Alba?*) will come up, bloom and ripen its seed in one month. Is a sweet grass and generally liked.
8. *Flote Fescue-Grass*. (*Festuca Fluitans*.) A most excellent grass, and what cattle are so fond of as to endanger their lives in getting at it; as it always chooses water with a miry bottom to grow in it cannot be cultivated. The Cottenham and Cheddar cheeses owe their fame in great measure to this grass.

Hogs are as equally fond of it as kine, both fresh and dry.

9. *Annual Darnel*. (*Lolium Temulentum*.) The seed is almost of the size of wheat, and in times of scarcity has been made into bread; malted and made into beer it soon intoxicates.

The seed, which is called *Manna Seed*, affords a very pleasing and wholesome nourishment to man; when ground into meal it makes bread very little inferior to that in common use.

This is not the only grass whose seeds affords flour nearly equal to that of wheat: In Iceland is a kind of wild corn or grass of which the inhabitants make bread, which they will not exchange for foreign; the straw, which is very good, is used to thatch houses. It grows in sand, and the seed that drops off sows itself, and produces new corn regularly every year—The wild corn of Ireland is of two sorts, viz. *Arundo arenaria*, and *Arundo foliorum lateribus convolutis*.

10. *Sea Meadow-Grass*. (*Poa Maratima*.) One of the principal grasses in our salt marshes.
 11. *Rope-Grass*. (*Melica Nutans*.) Ropes are made of this grass for fishing nets, which are remarkable for lasting long without rotting.—The Spaniards make baskets, shoes, mats, durable ropes which need not be tarred, and cables, of a grass, called by them, *Sparto*, (*Stipa Tenacissima*) which would probably grow in England—It needs no preparation for working—Grows on sand hills.
 12. *Field Broom-Grass*. (*Bromus Secalinus*.) The pannacles are used for dying green.
 13. *Purple Melic-Grass*. (*Melica Cærulea* of Light-foot). Flourishes in abundance in the neighbourhood of the copper mines of *Anglesea*; where the fumes destroy nearly every thing else that vegetates.
 14. *Marsh Bent-Grass*. (*Agrostis Palustris*.) In Stillingfleet's Observations on Grasses, we have an account of a field of about four acres, at Ruscomb, in Berkshire, which always lay under water, and on which field grew this, and *Flote Fescue-Grass*; and maintained five farm horses in good heart from April to the end of harvest, without giving them any other kind of food, and even yielded more than they could eat.
 15. *Grasses suited for grass-plats*, viz. Sheeps Fescue-Grass; fine Bent-Grass. (*Agrostis Capillaris*.)
 16. Grasses supposed to be suited for sheep-walks—Fine Bent Grass; Yellow Oat-Grass. (*Avena Flavescens*.) Common Quaking-Grass. (*Briza Media*.)
- It will not be amiss, to inform those who may be inclined to save grass-seed—that the seeds of most of the

grasses fall from the husks within a short time after they are ripe, and many of them before (to appearance) they are so; so that if not carefully and constantly watched, a few days neglect will deprive you of the opportunity of collecting them. The seeds of Tall Fescue-Grass, (*Festuca Elatior*;) and Darnel Fescue-Grass, (*Festuca Loliacea*;) not being fertile, those grasses can only be cultivated by parting their roots and planting them out: It has been thought, that meadows would be best formed, by planting out the roots of grasses, and other plants, in a regular manner; this great advantage would attend it; noxious weeds might be more easily kept down, until the grasses and other plants had established themselves.

FOREIGN GRASSES.

1. *Brussels Quaking-Grass*: An annual, growing about 18 inches high—A field has been sown with it in Kent.

2. *Carolina Winter-Grass*. This is probably only another name for one of the following grasses.

3. *American Timothy-Grass*.

Culture, &c.

1. SOIL.

a. Thrives best in a wet soil.

2. SEED.

a. Sown in September—In December the plants will appear with as much strength as if it had grown for several years.

3. USE.

a. Horses and black cattle are extremely fond of it; and in many respects it is said to be far superior to either Lucern or Burnet.

b. Binds boggy ground so close, that in a few months a waggon may be drawn over it.

4. *American Black-Grass*.

Culture, &c.

1. SEED.

a. Should not be sown before Lady-day.

5. *American Cock's-foot Grass*. (*Dactylis Americanus*. Dr. Anderson.)

Culture, &c.

I. PLANT.

a. Its leaves are broad, firm, and roundish, but neither very long, nor close upon one another.

6. *Chinese Feather-Grass*—Cultivated in some gardens as a curious plant; as it does not grow above a foot high, and the leaves are small and wiry, it is probably of no use to cattle.

In Germany is a grass called *Honey-grass*, which is much valued for milch cows; it would probably thrive in England, at least it is worth a trial.

GUINEA-GRASS.

From the mildness of the winters in Cornwall and Devonshire, and Myrtles growing every where in the open air, without the aid of green houses; the President of the Board of Agriculture has very properly recommended, from these circumstances, the trial of the Guinea-grass, to the inhabitants of Cornwall and Devonshire.

The Guinea-grass is considered in Jamaica next the sugar-cane in point of importance; the breeding farms throughout the island were originally created, and are still supported, chiefly by means of this invaluable herbage; which bestows verdure and fertility on lands, that otherwise would not be worth cultivation. The seed was first brought from the coast of Guinea to Jamaica as food for some curious birds, who died before they had consumed the whole; the remaining seed was thrown into a pen or fold, where they sprang up; and the eagerness with which the cattle were observed to eat the grass, led to its being cultivated.

They have in Jamaica another grass, called Scot's grass; it is an aquatic plant, rises to 5 or 6 feet in height, with long succulent joints, and is of a very quick vegetation—From a single acre of this plant, five horses may be maintained a whole year, allowing 56 lb. a day to each.

” It has been sown in Maryland, but did not stand the winter, and scarcely seeded perfectly.”

" GREEN-DRESSING. (See Top-dressing.) "

GREEN-HOUSE.

Is designed to protect during winter such exotic plants, shrubs, and trees, as will bear being exposed to the open air during summer.

1. Aspect—Millar recommends a green-house to consist of three divisions; the middle one to have upright glasses, and to face the South; the wings to have low upright front glasses, and sloping glass roofs; one wing to face S. S. E. the other S. S. W. By this plan, from the time of the sun's first appearance upon any part of the building until it goes off at night, it is constantly reflected from one part to the other.
2. According to Dr. Hales, plants that will bear being exposed in the open air of our summers, flourish most, and make the greatest progress in their growth, with a heat from 17 to 30 degrees—The heat of a green-house is kept up during winter by keeping the windows and shutters close, or by fires in very severe weather.
3. Plants that shed their leaves require less water in winter, than those that retain them.

" The *Vinery* treated of by Mr. Peachley, instead of a green-house, would suit various good purposes in the country gardens of *America*."

GUINEA-CORN. (*Holcus Scirpium* et *Saccharatum*.)

Culture, &c.

1. SEED.

- a. Sown on a warm border early in April.

2. PLANT.

- a. When up, to be thinned to the distance of a foot asunder in the rows, and the rows 3 feet distant.
- b. To be kept clear of weeds, and the earth drawn up to the stems.
- c. Does not ripen its seed but in a warm season, and then in September.

Perhaps a hardier variety than any yet tried might be procured from abroad; or with care raised in this country.

3. USE.

- a. The grain made into bread, or otherwise used, is esteemed very wholesome—Is used for feeding poultry.
- b. The juice of the stalks is so agreeably luscious, that if prepared as the sugar-canes, they would afford an excellent sugar.

GUINEA-HEN. (*Numida Meleagris.*)

Var. 1. Pied, 2. White.

The native place of this bird is Africa; but is now common in England, the flesh of the young birds being much esteemed. The female lays many eggs in a season, which by some are set under hens, and require care in the bringing up, though in some seasons may be raised without difficulty. They are fond of having a large range; but if there is much shelter the hen will secrete a nest, and appear on a sudden with more than twenty young ones at her heels, nay sometimes with as many as twenty-seven.

" HABITATIONS IN THE COUNTRY.

" Should be adapted to country affairs, avoiding the excess, loftiness, and shew of city habitations."

HAY.

1. *How made in Middlesex.*

- a. First day, all the grass mowed before nine o'clock in the morning is tedded, broke as much as possible, and well turned. This is performed before 12 o'clock; and, if hands are plenty, it will be of great advantage to turn it a second time. It is then raked into windrows, and afterwards made into small cocks.
- b. Second day, the business is to ted all the grass which was mowed the preceding day after nine o'clock, and to ted, and treat as above, all that was mowed on this day before nine o'clock. But before the grass of this day's work is turned, the small cocks of the preceding day, should be well shaken out into straddle, or separate plats, of five or six yards square. If the crop is so thin as to leave the spaces between the plats, or straddles, pretty large, the space must be raked clean. The next business is to turn the plats or straddles, then

to turn the grass of the second day's mowing, as before directed. This should always be done, if there are hands sufficient, before one o'clock, that the people may, as the custom is, take one hour for dinner, whilst all the grass mowed is drying. After dinner the straddles are raked into double wind-rows; the grass into single wind-rows; and the hay cocked into middling field-cocks, called bastard cocks; the grass is then cocked as before on the preceding day.

- c. Third day, the grass mowed on the preceding day, and on the morning of this day, is to be managed as before directed. The grass made the preceding day, and now in grass-cocks, is to be managed in the same manner as on the first and second days. The hay now in bastard cocks is spread again into straddles, and the whole is turned before the people go to dinner, that is, the hay, though last spread, is first turned; next that which was in grass-cocks, and then the grass. If the weather should have been sunny and fine, the hay that was last night in bastard cocks, will on the afternoon of the third day be fit to be carried; but if the weather should have been cool and cloudy, no part of it probably will be fit to carry; and, in that case, the first thing done after dinner is to rake the second day's hay into double wind-rows; the grass into single wind-rows; to make the first day's hay into cocks with a fork, putting only one cock in a straddle; to rake the ground clean, and put the rakings on the top of each cock. The hay raked into double wind-rows is now put into bastard cocks; and the grass which is in single wind-rows is made into cocks as before. Provided there be no rain, even though the weather should have been cloudy, the hay now in great cocks ought to be carried; the hay in bastard cocks put into great cocks; the grass-cocks made into bastard cock; and that tedded this morning into grass-cocks.

In the course of hay-making the grass cannot be too much protected from the *night dews* or *rain* by cocking. Care also should be taken to proportion the number of hay-makers to the mowers, so that there should be no more hay or grass in hand at one time, than can be managed according to the above direction.

d. Fourth day, the hay is put into stacks.

The above method of making hay has been found (if the weather be favourable) by a long course of practice and experience, to be attended with almost invariable success.

2. The right time of mowing grass of all kinds for hay, is when it is fairly out in bloom; if deferred much longer, the blade withers and the flower stems grow hard and dry, being deprived of the best part of its nutritive juices; besides, if cut whilst in a growing state, and there should happen rain, it would take very little damage, in comparison with the damage it would sustain if nearly ripe.

3 It is contended, that hay made from old grass, though not so bulky, yet is of a better quality, and will keep longer in a good condition, than hay made from artificial grasses, particularly from a mixture of clover and rye-grass.

4. Before fields are put up for hay they should,—

a. Be carefully gone over in the spring of the year, and all thistles, docks, nettles, and other large weeds cut up.

b. After the dung is pretty equally spread over the fields, a brush harrow should be drawn over to divide and separate the lumps, that they may the more readily enter the earth; and lastly,

c. Cleaned from stones and other troublesome matter that may be carried out with the dung.

5. Dried on pins in barns at the Duke of Argyll's, in Scotland; the hay thus dried is remarkably green and fresh.

6. Salting hay in the rick reckoned very healthful for cattle, and preferred by them to hay not salted.

7. Hay barns have been of late erected in many places in Lancashire standing upon pillars, and covered with slates; sometimes with a bottom boarded with planks, open in the joints, perforated with holes, and lying hollow a space above ground, to admit a free circulation of air all under the hay.

These buildings are useful, cheap, and by their great convenience in bad weather, and great preservation they afford the hay, will soon repay the first expense.

8. To prevent its heating, a chimney is made in the stack, (by a basket being placed in the middle, and drawing it up by a cord as the rick is made) in order to suffer the air, generated by heat, to escape, and to prevent the stack taking fire; gutters are also cut in the ground lengthways, and across, covered with planks, in that place where a stack is to be built: through these trenches, in different directions, the outward air may enter, pass through, then ascend the aperture left in the stack; and, this continual circulation takes away the general heat or foul air, which, if confined together without any vent, might produce damage to the hay, or worse effects; and, by these useful precautions, the farmer is enabled to collect his hay together at a more early period, and in a more juicy state; by which good practice, time is saved, and the quality of the hay improved.

HAZLE. (*Corylus Avellana*.)

1. Common Hazle-nut Tree. *Var.*—Large cluster wood nut.
2. Filbert Tree. *Var.*—1. With red kernels. 2. With white kernels.
3. Barcelona Nut.
4. Cob Nut (very large).
5. Long Nut.
6. Byfanthian Nut.

Culture, &c. of the Common Hazle.

1. SOIL.

- a. Mossy steep side of downs.

2. INCREASED.

- a. By planting the nuts, in March.
- b. By dividing the roots into several parts.
- c. By suckers.
- d. By layers.
- e. By grafting—This may be practised, to continue and improve any particular fine variety of the Filbert, &c.

3. TREE.

- a. Frequently planted in hedges and in coppices.
- b. Cut at from seven to twelve years growth for hurdles, hoops, &c. and at sixteen for charcoal and once in three or four years for corf-riods.

4. USE.

a. The wood is used for fishing rods, crates, hoops for barrels, dead hedges, &c.

Fishing rods should be cut between the end of November and Christmas, when the sap is gone down into the roots, tied together in a bundle, and let lie on a dry floor, for fifteen months.

b. The roots for inlaying or staining.

c. Charcoal for forges,

Painters and engravers prepare coals for delineating their designs thus—They take pieces of hazle about as thick as a man's arm, and 4 or 5 inches long, dry and then cleave them into pieces, about as thick as ones finger. These they put into a large pot full of sand, and then cover the top of the pot with clay. This is exposed in a potter's oven, or any other sufficient degree of heat, and when cooled again, the sticks are found converted into charcoal, which draws freely and easily rubs out again.

d. Of the nuts, which are agreeable to most people, a kind of chocolate has been prepared, and there are instances of their being formed into bread. The oil expressed from them is little inferior to the oil of almonds, and is used by painters and chemists, for receiving and retaining odors.

e. Where yeast is scarce, they take the twigs of hazle, and twist them together, so as to be full of chinks; these they steep in ale during its fermentation; then hang them up to dry, and when they brew again they put them into the wort instead of yeast.—It is also used for making bread, but such bread turns sour the second day.

f. A strong ooze in water of the buds, leaves and branches, and boiling a fresh quantity of the same water, gives wool a lively olive.

g. The yellow powder of the catkins is used by painters among their colours—It burns in the flame of a candle like sulphur.

Culture, &c. of the Filbert Tree.

1. SOIL.

a. The best a stone shattery sandy loam.

2. INCREASED.

- a. By planting the nuts in March.
- b. By cuttings and suckers, planted from January to April—also by layers.

3. TREE.

- a. Is principally cultivated in Kent, to supply the London markets with the nuts; and are planted among hops. In other parts they are arranged hedge ways, 5 feet distant in the row, and suffered to take their natural growth—Or planted for variety in espaliers, 15 feet asunder.
- b. It is a disadvantage for the trees to grow with great luxuriance, as they bear most nuts when but moderately strong: great skill is necessary in pruning, to make them bear well.

In Italy, Hazel-nut Trees are planted in rows, and by dressing, formed into large bushes of many stems; every year the roots are refreshed with new earth, and the straggling shoots pruned off with great attention. Those in the neighbourhood of Avellino, in good years, bring the inhabitants a profit of £11,250.

HEIFER.

Some let them take the bull at two years old, others at three—In Wiltshire they are put to the bull about a year and a half old, it being the prevailing opinion, that those which are kept a year longer, do not turn out good milkers—The time of the year July.—(See page 89).

HEMP.

- 1. Common Hemp. (*Cannabis Sativa*.)
- 2. Chinese Hemp. (*Crotolaria Juncea*.) This is said to be of a quality superior to the common hemp. In an attempt to cultivate it in England it grew upwards of 12 feet high, and nearly 7 inches in circumference; but the seeds will not acquire sufficient maturity to vegetate, unless the plants are forwarded by a hot-bed—The Chinese make paper with it.

Culture, &c. of the Common Hemp.

1. SOIL.

- a.* A sandy loam, moist and putrid, but without being stiff or tenacious; or old meadows and low bottoms, near rivers—in one word the best land.

Has been sown 70 years on the same land.

2. SEED.

- a.* Time of sowing from the middle of April to the end, but will bear being sown all May—The early sown yields the best hemp.

- b.* Eleven pecks per acre of seed; in some places two bushels.

3. PLANT.

- a.* Requires no weeding.

- b.* Seedling hemp not so good as others.

- c.* In some places no distinction is made between male or female; or fimble and seed hemp; in others there is, the male (*i. e.* without seeds in the head) being ripe in July, about nine weeks after the sowing, is drawn out by the hand; the female is seldom ripe till the beginning of September, when they are also drawn out and tied in bundles, and set up to dry; about 10 days afterwards, these bundles are untied, the heads held upon a hurdle by one person, whilst another beats out the seed with a small threshing flail.

4. IS PREPARED FOR THE MANUFACTURER.

- a.* By being laid upon stubble or pasture ground, to be gradually dew ripened.

- b.* Water rotted; clay pits, preferred for this purpose to running water, are cleaned out once in seven or eight years; some only water five times in the same hole, which is even thought too much by others. It is generally four days in the water if the weather is warm, if not, five; but they examine and judge by feeling it. The grassing requires about five weeks; and if there are showers, constantly turned twice a week, if not thrice. This is always on grass land or layers; it is then tied up in bundles of eight or ten bails, and carted home to a barn or house to break directly.

The water in which hemp has been soaked, drank in large quantities, has been fatal to many.

5. USE.

- a. Made into cloth, twine, cordage, netting, &c.
- b. The offal, which is called hemp *sheaves*, makes good fuel.
- c. From the seeds is drawn, by expression, an oil, which is very proper for burning.

Poultry and small birds are often fed with the seed, which overloads them with fat, if given in too large quantities, or long continued. It also changes the plumage of Bulfinches and Goldfinches to black.

- d. If sown round ground planted with cabbages, it is said no caterpillars will infect them.

"*Karl-hemp*, the latter grain hemp bearing seed—female."

"Every farmer ought to raise as much *hemp*, as at least, will provide him with the *rope*, *bagging*, &c. that may be required for his farm; also a simple rough *wheel* for spinning his *bempen rope*, *straw rope*, &c. standing near his house, always at hand—The convenience is very considerable. (See the plate, fig. 5.)"

Golden-rod. (*Solidago Canadensis*.) Affords very strong fibres if treated like hemp. This plant is perennial, the stalks numerous, above 5 feet high, and not branched—Single fibres of the Sun-flower (*Helianthus*) are as thick as small pack-thread, and full as strong.

HOEING.

Is necessary and beneficial to plants, for two things: first, for destroying of weeds; 2dly, because it disposes the ground the better to imbibe the night dews, keeps in a constant freshness, and adds a vigor to the plants and trees, whose fruit by that means becomes better-conditioned than otherwise they would be.

1. HAND-HOES.

- a. Dutch-hoe; leaves the ground smooth; and is suited to destroying weeds between plants raised in rows; or such as are planted at some distance from each other.
- b. Narrow hoe or spud; this is used for weeding corn, and cutting up weeds in pastures.

- c. Common-hoe; this is used not only to destroy weeds, but to thin plants, as turneps, &c. it varies in the breadth of the blade, from less than 3 inches to above a foot—Is used also to earth up plants.
- d. A hoe has been invented for the set and drilled corn; a figure of which may be seen, in the Bath Agriculture Society's Papers, Vol. IV.
- e. Duckett's-hoe; with this a person has hoed the fifth part of an acre of barley, drilled at 9 inches, in 36 minutes.
- f. Portuguese-hoe; has a short light handle, and the iron-work heavy, and of a conical form; cuts deep without much exertion, the exact reverse of our common hoe.

2. HORSE-HOES.

- a. Hewitt's.
- b. Norfolk.
- c. Skim or Kentish.
- d. Cooke's patent drill is so constructed, as to be capable of being converted into a horse-hoe, that will weed six alleys at a time; and with it one man, one boy, and a horse, will hoe eight or ten acres per day.]
- e. That expands to all breadths—See Amos's Treatise on Drill Husbandry.

HOLLY. (*Ilex Aquifolium*.)

Gardeners make upwards of forty varieties, the most striking of which are, 1. With red, white or yellow berries. 2. With the leaves bordered or blotched with yellow or white. 3. Without spines. 4. With the surface of the leaves spiny.

Culture, &c.

1. INCREASED.

- a. By seed. The berries should be buried in the ground one year; and then taken up and sown at Michaelmas; the following spring the plants will appear.
- b. By laying along in the ground well rooted sets, a yard or more in length, and stripping off the leaves and branches; cover with earth, and they will send out vast quantities of suckers.

2. TREE.

- a. If transplanted in summer scarcely receives a check from the removal.

3. USE.

- a. The wood is used in veneering, and is sometimes stained black to imitate ebony. Handles for knives, and cogs for mill-wheels, are made of it; and also hones for whetting of razors.
- b. Sheep are fed in winter with the croppings.
- c. It makes an impenetrable fence, and bears cropping.
- d. The bark fermented and afterwards washed from the woody fibres makes the common birdlime.

Birdlime is also made of Mistletoe berries.

Besides the use of birdlime to catch birds; spread upon brown paper, it is the best method that can be used for destroying house flies.

HOOK AND HINKS; OR HOOK AND SWIPE.

A method of cutting peas with two reap-hooks; that in the right hand cuts them; and that in the left, draws them together in bundles.

HOP. (*Humulus Lupulus.*)

1. Long and square Garlic Hop.

This is a late hop, but hardy and a plentiful bearer.

2. Long White Hop.

There is another sort of White Hop, more tender and a less plentiful bearer; but it has this advantage, it comes first to market.

If the hop-garden be planted with a mixture of several sorts of hops, that ripen at several times, it will cause a great deal of trouble, and be a great detriment to the owner.

3. Oval Hop.

Culture, &c.

1. SOIL.

- a. The best Kentish Hops are raised on a good rich loamy surface, with a deep subsoil of a loamy brick earth: but there are some good grounds where the surface is very flinty, and some of a gravelly nature, but these are very inferior.

- b.* Those raised on clay are stronger than the Kentish, going almost as far again in use; but those that are accustomed to the latter, object to their flavour as rank.
- c.* Good Hops have been grown in Scotland on a red bog; the holes however filled with a good compost, from which it may be gathered, that providing the holes are filled with a good mould, it signifies little, what the surrounding soil is.

The sea air is not (as has been supposed) detrimental to hops.

2. PLANT.

- a.* Increased either by nursery plants, or by cuttings.
- b.* Number of hills to an acre, 800, 1000, or 1200. The hills are formed, by digging in the spring, holes about the size of a gallon, which are filled with fine mould.
- c.* One, two or three plants are put in each hill; if cuttings four or five, they are to be about 3 or 4 inches in length, and covered an inch deep with fine mould.
- d.* Cuttings require no poles the first year; but plants do of 6 or 7 feet high—The second year they have full sized poles from 15 to 20 feet high.
- e.* In the spring the old binds are cut off smooth about an inch below the surface, and a little fine mould drawn over the crown.
- f.* Two poles at each hill, and two binds upon each pole.

The bind when 2 feet high is to be guided to the proper pole, turned round it according to the sun, and fastened loosely with withered rushes.

- g.* The proper time for gathering them is known by the leaf of the hop rubbing freely off the strig, and the seed turning brown.

3. HOPS ARE FREQUENTLY INJURED, IF NOT DESTROYED

- a.* By a small snail or slug, which eat the young bind on its first appearance.

Manuring with malt-culm is found to prevent this injury, by sticking so fast to the slimy bodies of the snails, that they cannot creep over to the bind.

- b.* By a fly (*Aphis*) whose excrement is called the honey-dew.

Dr. Withering observes, that this insect seldom increases so as to endanger the plant, unless it is in a weak condition, from the larvæ of the Ottermoth (*Phalcæna Humuli*) feeding on its root; to destroy which, he advises covering the hop-yards with stones; as when the hop grows wild in stony places, where the moth cannot penetrate to deposit its eggs, the hop is never known to suffer from the honey dew.

There are two distempers to which Hops are liable, viz. the *Fen*, and the *Smit*, for which no effectual remedy has been found out. Dr. Hales imputes the *Fen* to a rainy moist state of air, without a due mixture of dry weather; too much moisture then hovers about the hops, so as to hinder in a great measure the kindly perspiration of the leaves, whereby the stagnating sap corrupts, and breeds mouldy *Fen*, which often spoils vast quantities of flourishing hop-grounds—Is more fatal to low and sheltered situations, than to high and open grounds.

- c.* The hops are cleared of insects (which would otherwise destroy them) by putting a small quantity of brimstone on the fire, when the hops are first placed on the kiln, which not only suffocates the insects, but occasions a speedy evaporation of the superfluous moisture, and the hops come off the oast much brighter in colour.

4. USE.

- a.* Infused in wort or boiled along with it prevents the beer growing sour.
- b.* The young shoots are eaten early in the spring as asparagus; and are sold under the name of Hop-tops.
- c.* Strong cloth is made in Sweden from the stalks; for this purpose they must be gathered in autumn, soaked in water all winter; and in March, after being dried in a stove, they are dressed like flax.

From a trial made in England, in consequence of a premium held out by the London Society, for the encouragement of Arts, &c. it appears that hop-binds will afford a material for making cloth, that will an-

for the purpose of fine sacking and coarse bagging for hops.

- d. The vines for binding bean sheaves, oats, &c.
- e. Paper has been made from the binds.
- f. The ashes of the stalks is used in making glafs.
- g. In Sweden, after the hops are gathered, the tendrills and leaves are given to sheep, by whom they are eagerly eaten, and are reckoned both as food and physic.

HORNBEAM. (*Carpinus Betulus.*)

Culture, &c.

1. SOIL.

- a. Will thrive upon cold, barren, exposed hills.

2. INCREASED.

- a. By seed; when intended for trees.

The seed should be sown as soon as it is ripe; and the young trees transplanted at two years old to where they are designed to remain.

- b. By layers; these answer for hedges and underwood, as well as those raised from seed.

3. TREE.

- a. Grows to a large size.
- b. The wood is very white, very tough, and burns like a candle.

4. USE.

- a. It is useful for turning, and for many implements of husbandry; it makes cogs for mill wheels even superior to yew.

- b. For hedges.

In Germany the husbandmen throw up a parapet of earth, with a ditch on each side, and plant hornbeam in such a manner, as that every two plants may be brought to intersect each other in the form of a *St. Andrew's Cross*.—In that part where the two plants cross each other, they gently scrape off the bark, and bind them with straw thwart-wise; here the two plants consolidate in a sort of indissoluble knot, and push from thence horizontal slanting shoots, which form a sort of living palisado, or *chevaux de frise*. It is not

uncommon in Germany, to see the sides of high roads thus guarded for ten miles together.

Very neat espalier hedges, by the sides of garden-walks, are often formed of the young trees.

- c. The inner bark will die yarn of a yellow colour.
- d. Being wounded in the spring, it yields a liquor like the Birch.
- e. The green boughs are dried for the use of cattle.

We have three foreign Hornbeams, which are very hardy and propagated by layers, viz. 1. The Hop Hornbeam (*C. Ostrya*); 2. Virginian flowering Hornbeam; and, 3. Eastern Hornbeam, which is of an humble growth: the first is of a quicker growth than the English, on which the nursery gardeners have a bad practice of grafting it.

HORSE.

The Suffolk breed of horses are in general esteemed the best we have for the farmer, be the soil and situation what it may.

A late writer has given us the following chief points in a farming cart-horse: Neck not long, nor too thick; short legs, rather flat, than round and gummy; fore-feet even, not too distant; wide chest; strong, but not high shoulders; considerable length of waist, supported by a wide loin; quarters full, and rather raised; strong muscular thigh; size, 15 hands 1 inch to 16 hands high—Being somewhat fore-low gives them an advantage in draught; and a moderate length of waist assures speed in the walk, very often an object of consequence upon a farm.

"The smell of *Goats* affect horses (see *Goats*)."

HORSE CHESNUT. (*Æsculus Hippo Castanum.*)
Culture, &c.

1. INCREASED.

- a. From nuts.

2. TREE.

- a. When these trees are transplanted their roots should be preserved as entire as possible.
- b. Grows well in coppices.

a. The wood as good as that of the Chesnut.

3. USE.

a. As timber for building.

b. The nuts are used to die with ; and starch has been made of them ; they are also used to whiten cloth.

c. In Turkey the nuts are ground and mixed with provender for horses, especially for those which are troubled with coughs, or are broken winded ; in both which disorders they are accounted very good.—Deer are very fond of them.

The Horse Chesnut was brought from the northern parts of Asia about the year 1550.

HORSE RADISH. (*Cochlearia Armoracia*.)

Culture, &c.

1. SOIL.

a. Should be dug two spits deep or more if it will allow it.

2. INCREASED.

a. By the crown of the roots about 2 inches long, planted 4 or 5 inches apart in trenches 10 inches deep, and covered with earth.

3. PLANT.

a. The time for planting is October for dry land, and February for moist—The roots are fit for use the second year after planting.

4. USE.

a. The scraped root is in common use at our tables, as a condiment for fish, roasted beef, &c. and it is used for many other culinary purposes. An infusion of it in cold milk makes one of the safest and best cosmetics. It is also used medicinally.

Neither Horses, Cows, Goats, Sheep, or Swine will eat it.

RIVER HORSE-TAIL. (*Equisetum Hyemale*.)

This plant is in some places mixed with the fodder of cows to increase the quantity of their milk.

HOT-BEDS.

Are in general use in these northern parts of Europe, without which we could not enjoy so many of the pro-

ducts of warmer climes as we do now; nor could we have tables furnished with the several products of the garden, during the winter and spring months.

1. *Made with Tanner's bark*—This is preferable to that made with dung for all tender exotic plants or fruits which require an even degree of warmth to be continued for several months—The manner of making it is as follows :

There must be a trench dug in the earth about 3 feet deep if the ground be dry; but if wet it must not be above 6 inches, and must be raised in proportion above ground, so as to admit of the tan being laid 3 feet thick. The length must be proportioned to the frames intended to cover it, but there should never be less than 11 or 12 feet, and the width not less than 6. The trench should be bricked up round the sides to the abovementioned height of 3 feet, and should be filled with fresh tanner's bark (*i. e.*) such as the tanners have lately drawn out of their vats), but should first be laid in a round heap for a week or ten days before it is put into the trench, that the moisture may the better drain out of it, which, if detained in too great a quantity will prevent its fermentation; then put it into the trench, and gently beat it down equally with a dung fork, without treading it; put on the frame over the bed, covering it with the glasses, and in a fortnight it will begin to heat, at which time the pots of plants may be plunged into it.

2. *When made of horse-dung*: The dung should be fresh from the stable, and both the long and short forked up in a heap or ridge for a week or fortnight, turning it over once or twice in that time when it will be fit for use; make the bed the size of the frame, and from $2\frac{1}{2}$ to $3\frac{1}{2}$ feet high, and cover it with rich earth, from 6 to 10 inches deep—When the bed is too hot, it is to be cooled by making holes with a stake in the sides, which must be closed when the beds are of a proper temperature; if too cold, line the sides with fresh dung.—Cucumbers thrive when the heat of the mould is at 56 of the thermometer.

Besides tanner's bark, and horse-dung: hot-beds are made with oak-leaves, straw steeped in pond wa-

ter two or three days, coal-ashes, grafs; and also grains of malt after brewing thrown together in a heap and well watered, to make it ferment and heat.

3. Mushroom beds are made like the ridge of a house, composed of alternate layers of horse-dung and earth, covered with litter; in the surface of these beds, when they have acquired a sufficient degree of heat, the seeds or spawn is planted.

HOT-HOUSE.

Degrees of heat according to the thermometer, which it is necessary to keep up, for the growth and ripening of the fruit, of the following trees and plants.

1. *Peach*; from the time the forcing is begun till the fruit are about the size of peas, 55° —from the time that the fruit are of the above size, increase it by degrees to 60° , and keep it as near to that point as can be done. With sun-heat in winter till the middle of February, keep it about 60° ; increase it gradually to 70° : In summer it ought not to exceed 80° , and but seldom should get to that height.

2. *Nectarines* the same.

3. *Oranges* require in cold weather, that the mercury should be between 45° and 55° .

4. *Vines* 65° with fire, and 72° with sun-heat.

All the above according to Fahrenheit's thermometer.

5. *Pine-Apple*: Dr. Hales makes the heat 29 degrees above the freezing point—It does not appear what kind of thermometer he used.

HURDLES.

Moveable fences for sheep.

1. *Clofe hurdles* are made of ten or eleven hazle stakes, $3\frac{1}{2}$ feet high, and 1 foot apart, wattle between with rods of the same kind of wood—This sort is esteemed the warmest and best kind of hurdle.

2. *Welsh hurdles*, are generally made of split oak, and consists of two upright end pieces, $3\frac{1}{2}$ feet high, joined by five mortised bars $6\frac{1}{2}$ feet long; which are strengthened by an upright bar in the middle, and two sloping ones.

In exposed situations it is in some places the practice to wattle either furze or straw between the bars of such hurdles as are set to windward.

3. *Rack-hurdles*, the same as the last, leaving out the middle rail and nailing upright pieces across at a proper distance, to admit the sheep to put their heads through; they are used in feeding off of vetches; a swarth being mown in the direction you wish to plough the land, a sufficient number, allowing one to five sheep, are set close to it; at noon the shepherd mows another swarth, and the same at night; next morning, a swarth being first mown, the hurdles are again set, thus moving them once in the twenty-four hours; by this trifling additional trouble the vetches are eaten clean off, and the land equally benefitted.
4. *Net-hurdles*, these are used in Yorkshire and in Scotland; they are made of net-work of small cord, the size of the meshes 4 or 6 inches; the width or height of the fence about 3 feet, supported by stakes 8 or 10 feet asunder. The cost, 4d. or 4½d. a yard.

ENGLISH HYACINTH. (*Hyacinthus Non-scriptus*.)

This is a native plant, growing in woods and hedges: of the roots, which are poisonous, starch has been made: and very lately it has been discovered, that they yield an useful gum, which is got from them by pounding the root, infusing the pulp in water, occasionally subjecting it to pressure, and by evaporation.

HYSSOP.

1. Common Hyssop. (*Hyssopus Officinalis*.)
2. Hedge Hyssop. (*Gratiola Officinalis*.) This is easily propagated by parting the roots in autumn, and planting them in a moist soil, and shady situation. It has been used in medicine, but is not now much esteemed.

Culture, &c. of Common Hyssop.

1. INCREASED.

1. By seed sown in March.
2. By slips, planted either in spring or autumn.

2. PLANT.

- a.* To be planted 1 foot asunder, if they are not designed to remain a long time; if they are, 2 feet—Thrive best on a poor dry soil.

3. USE.

- a.* In medicine; and for culinary purposes.

" ICE.

" It is advantageous, wholesome and comfortable in the country. Particularly useful in the Dairy."

JERUSALEM ARTICHOKE. (*Helianthus Tuberosus*.)

Culture, &c.

1. SOIL.

- a.* Flourishes in almost any soil.

2. INCREASED.

- a.* By planting the smaller root, or the larger ones cut to pieces, observing to preserve a bud to each piece.
b. May be planted either in the spring or autumn; in drills $3\frac{1}{2}$ feet asunder, sets 9 inches.

3. PLANT.

- a.* To be flat hoed, and twice earthed up.
b. Produce about 480 Winchester bushels per acre.
c. Are proof against the severest frost, and may be taken out of the ground as occasion may serve.

The ground cannot easily be freed from them after being once planted.

4. USE.

- a.* Supposed to be equal in value to potatoes for feeding store-pigs, such as are not less than five or six months old; for fattening hogs not near so valuable as potatoes.
b. Their chief recommendations are—the *certainty of a crop*, flourishing *in almost any soil*, being *proof against the severest frosts*, and being *taken out of the ground as occasion may serve*.
c. The boiled roots are common at many tables, being compared for taste to the heart of the Artichoke.

INARCHING.

This method of grafting is used, when the stock intended to graft on, and the tree from which the graft is taken, stand so near (or can be brought so near) that they may be joined together. The method of performing it is as follows:

Take the branch you would inarch, and having fitted it to that part of the stock where you intend to join it, pare away the rind and wood on one side about 3 inches in length. After the same manner cut the stock or branch in the place where the graft is to be united, so that the rind of both may join equally together, that the sap may meet; then cut a little tongue upwards in the graft, and make a slit in the stock downward to admit it; so that when they are joined, the tongue will prevent their slipping, and the graft will more closely unite with the stock. Having thus placed them exactly together they must be tied with some bafs; then cover the place with grafting-clay, to prevent the air from entering to dry the wound, or the wet from getting in to rot the stock; you should also fix a stake in the ground, to which that part of the stock, and also the graft, should be fastened, to prevent the wind from breaking them asunder—In this manner they are to remain about four months, when the graft may be cut from the mother tree, sloping it off close to the stock, and at the same time covering the jointed parts with fresh grafting clay.

INDIGENOUS PLANTS.

The uses of which, are *not mentioned in other parts* of this work.

1. As *pot herbs*.

- a. The young leaves of Bladder Campion (*Stellaria Behen*) compared to Peas, Spotted Hawkweed (*Hypochaeris Maculata*), Common Mallow (*Malva Sylvestris*), Pilewort (*Ranunculus Ficaria*), Blue mountain Sow-Thistle (*Sonchus Oleraceus*), White and red dead Nettle (*Lamium album & purpureum*).
- b. The whole plant as of Ground Ash (*Ægopodium Pedagraria*), Sea Blite (*Chenopodium Maratinum*), Charlock (*Sinapis Arvensis*) the tender tops, Chick-

weed (*Alfina Media*) compared to Spinach, Comfrey (*Symphytum Officinalis*, Cowslip (*Primula Vulgaris*), Herb Gerard (*Ægopodium Podagraria*), Lovage (*Ligusticum Scoticum*), Dog's Mercury (*Mercurialis Perennis*) not wholesome when old, Nettles (*Urtica Dioica*) when young, Orache (*Atriplex Hastata*), Ox-tongue (*Picris Echioides*), Samphire (*Crithmum Maratinum*).

- c. The young shoots peeled of English Mercury (*Chenopodium Bonus Henricus*), Sea Holly (*Eryngium Maratinum*); the stems before the flowers appear, peeled, of Burdock (*Arctium Lappa*), and of the Thistles; those of the Milk Thistle (*Carduus Marianus*) to be soaked in water to take out the bitterness.
- d. The roots of yellow Goatsbeard (*Tragopogon Pratenfe*), before the stems shoot up, Wood Peas (*Orabus Tuberosus*), Rampion (*Campanula Rampion*).
- e. In the year 1655, during a time of great scarcity, the people about Orford in Suffex, were preserved from perishing, by eating the seeds of Sea Peas (*Pisum Maritimum*), which grew there in great abundance upon the sea-coast.

2. As fallad herbs.

- a. The young leaves of Burnet (*Poterium Sanguisorba*), Greater Daisy (*Chrysanthemum Leucanthemum*), Dandelion (*Leontodon Taraxacum*).
- b. The whole plant of Brooklime (*Veronica Beccabunga*), Winter Cresses (*Erysimum Carbarea*), Cowslip (*Primula Vulgaris*), Lovage (*Ligusticum Scoticum*), Scurvy-grass (*Cochlearia Officinalis*), Whitlow-grass (*Draba Verna*).

Yellow Stonecrop and Rock Stonecrop (*Sedum Reflectum & Rupestre*) are cultivated in Holland and Germany, to mix with Lettuces in fallads.

- c. The root of Rampion (*Campanula Rampion*). That of Reedmace (*Typha Latifolia*) is eaten by the poorer people in Virginia, who are very fond of it, because it has a sweetish taste.

3. As substitutes for,

- a. *Flour*—The dried and ground roots of Marine Bull-rush (*Scirpus Maratimus*), Couch-grass (*Triticum*

Repens), Dropwort (*Spirœa Filipendula*), Fern (*Pteris Aquilina*), Wood Peas (*Orobus Tuberosus*), Smaller Snakeweed (*Polygonum Viviparum*), the whole plant of Iceland Lichen (*Lichen Islandicus*).

The commissioners of the royal treasury at Copenhagen, declared in 1800, that this last plant afforded a wholesome, and well-tasted food; and premiums were offered the same year, by the economical society of Norway, for collecting it—Grows in Great Britain on hearths and mountains.

b. India Tea—The leaves of Germander (*Veronica Chamædrys*), Roses, especially those of the Dog Rose (*Rosa Canina*), Speedwell (*Veronica Officinalis*).

c. Coffee—Seeds of Cleaver (*Galium Aparine*).

d. Hemp—From the bark of most of the plants of the Mallow-tribe (*Althœa* & *Malva*), may be procured a sort of Hemp, which, if properly managed, might be wrought into cordage, or into fine strong thread of any kind.

e. Flax—A web from the stems of Nettles has lately been wove in appearance like linen, and promising to equal it in durability. Paper has also been made of the stems.

f. The decoction of Soapwort (*Saponaria Officinalis*) is used to cleanse and scour woollen cloaths; and the poor people in some countries use it instead of soap for washing.

4. *For dying.*

a. Green—Ragwort (*Senecio Jacobææ*), Tansey (*Tanacetum Vulgare*), the panicles of Broom Grass (*Bromus Hordeaceus*), the berries of Privet, and the dried leaves of Devilsbit.

b. Yellow—Trifid water hemp Agrimony (*Bidens Tripartite*), Lesser Burdock (*Xanthium Strumarium*), Devilsbit (*Scabiosa Succisa*), Goose-grass (*Galium Verum*), Lichens (*Lichen Juniperinus Vulpinus*, & *Parietinus*), Knapweed (*Centaurea Jacea*), Hedge Nettle (*Stachys Sylvatica*), Water Pepper (*Polygonum Hydropiper*), Saw-wort (*Serratula Tinctoria*), Spotted Snakeweed (*Polygonum Persicaria*), Kidney Vetch (*Anthyllis Vulneraria*).

The beaked Lichen (*L. Prunastri* ?) will dye silk and wool yellow, according to the following receipt—Take half an ounce of the powdered plant, and mix it in a high glass vessel, with two ounces of strong spirit of nitre, previously diluted with eight ounces of water; let the mixture stand for a week, and then digest it in a sand heat for an hour or more, and add four ounces more of water to it; filter the solution, which will be of a fine yellow.

c. Orange—The tops of Heath (*Erica Vulgaris*), Yellow Wall Lichen and bearded Lichen (*L. & Barbatulus*).

d. Red—The roots of yellow Ladies Bed-straw (*Galium Verum*) dye a fine red, not inferior to madder; the roots also of Crosswort (*G. Boreale*), and Purple Marsh Cinquefoil (*Comarum Palustre*) dye red.

e. Fine Claret or Pompadour—Large yellow saucered Dyer's Lychen (*L. Tartareus*.)

Is much used by the Highlanders, who after scraping it from the rocks, clean it, and steep it in urine for a quarter of a year; then take it out, make it into cakes, and hang them up in bags to dry. These cakes are afterwards pulverised, and the powder is used to impart the colour, with an addition of allum to fix it.

f. Reddish brown—Cork or Arcell (*L. Omphalodes*) This is used by the Highlanders, and treated like the last. The roots of the white water Lilly (*Nymphaea Alba*) dye a dark brown.

g. Blue—Dogs Mercury (*Mercurialis Perennis*), Blue-bottle (*Centaurea Cyanus*), the expressed juice of the petals stains linen of a beautiful but not permanent blue. Mr. Boyle says, the juice of the central florets with the addition of a very small quantity of allum, makes a lasting transparent blue, not inferior to Ultramarine.

BASTARD INDIGO. (*Amorpha Fruticosa*.)

Culture, &c.

1. SHRUB.

a. This is one of our ornamental shrubs, and is pro-

pagated by laying down the young branches, which in one year will take good root.

b. Though the upper parts are frequently killed by the frost, they put up plenty of shoots in the following spring.

2. USE.

a. The inhabitants of Carolina, of which country this shrub is a native, make a sort of Indigo from the young shoots.

” INOCULATION—See Budding.”

INSECTS.

We are ready enough to put a due value on the larger animals, but many look on the minute tribe of insects rather created to torment, than to be useful to mankind. We grant that they are troublesome to us. But is therefore all care about them to be given up? by no means. On the contrary, we ought to contrive means to get rid of them, that they may not destroy both us and our possessions. This cannot be brought about unless we know their nature; when that is known, we shall more easily find out our remedies against them.

1. Injurious or troublesome to cattle.

a. Breeze, or *Gad-fly* (*Oestrus Pavis*). This fly deposits its eggs under the skin on the backs of oxen, from which proceeds worms called Warnel-worms, ” and by some the *Wolf*.“

In the south of Russia the decoction of white Hellebore (*Veratum Album*) is used to destroy them.

b. *Bot-Fly* (*O. Hæmoridalis*), deposits its eggs in the *rectum* of horses.

Linnæus says, that the bran of Flote Fescuegrafs will cure horses troubled with bots if kept from drinking for some hours.

c. *Grey-fly* (*O. Ovis*), breeds in the frontal *sinus* of sheep. Shepherds take out the maggot by trepanning.

The larvæ of the *Oestrus* are nourished the whole winter in the bodies of cattle; when full grown they

let themselves fall to the ground, and generally pass the Crysalis state under cover of the first stone they meet with.

d. *New-forest Fly* (*Hippobosca Equina*). This is very troublesome to horses, and is with difficulty killed.

Some of the common Flies (*Musca*), are very troublesome to cattle in pastures, from which they are often freed by the White Wagtail.

e. *Wasps and Hornets*—In the New Farmer's Calendar we have the following instance of the bad consequences that attended the neglecting to destroy a nest of these insects.—A poor horse attached to harrows disturbed the nest, and these horrible insects instantly burst out and covered him; the miserable animal, driven to raging madness, overturned his fellow, and mangled him dreadfully; but getting disengaged, he ran over hedge and ditch into the village, where, after doing considerable damage, and suffering most cruel torments, he was at length shot, there being no possibility of approaching to save him.

f. *Tick* (*Acarus Reduvius*).—This insect lives in the wool of sheep; and is frequently found alive in it a long time after it is shorn.

It is killed by, 1. Camphorated unctiō.—2. Butter and brimstone.—3. Turpentine camphorated.—4. Copperas water.

2. Injurious to Forest trees and shrubs.

a. Oak.

(1.) The larvæ of the Cynips *Quercus gemmæ*, occasions the large imbricated galls on the extreme buds; those of the C. *Q. baccarum*, small galls on the under side of the leaves; the C. *Q. folia*, the large galls; and the C. *Q. petioli*, the tubercles on the foot stalks of the leaves.

b. Elm.

(1.) The leaves are eaten by a white *caterpillar* with a black head; other insects cause galls and bladders on their surface.

(2.) A white maggot with a brown head eats the bark:

(3.) A little black long-snouted *Curculio* feeds upon the wood.

c. Ash—As the trunk of this and several other kind of trees, are not barked when cut down, it is not amiss to observe, that the species of beetle (*Cerambyx Violaceus*), which brings on the decay of wood, never attacks timber that has been stripped of its bark; a circumstance which ought to be known, and attended to by all persons who have concern with this article; and shews the advantage that would follow barking all trees.

d. Mountain Ash.

1. Leaves eaten by a brown C. with a black head and white neck.

e. Fir.

1. The larvæ of the *Chermes Abietis* occasions large tubercles on the end of the branches.

2. A small caterpillar feeds upon the pith of the leading branches—The only method of destroying them is in young trees to lop off the branch.

3. The dry wood or deal in houses is eaten in round winding holes, by the larvæ of the *Dermestes Domesticus*—This insect is what is called the Death-watch.

f. Lime.

1. The leaves eaten by a colourless C. with a black head, and which by its web prevents the young leaves unfolding.

g. Willow.

1. The leaves eaten by a pale green C. with a dark green stripe down the back, and a white one down the side—The *Cynips Capreae* forms galls on the surface of the leaves.

b. Horse Chestnut:

1. The leaves eaten by a green C. striped down the back with white, head brown.

2. The flowers eaten by a pale yellow C. with green lines down the back, head white.

i. Quickset.

1. The leaves eaten by a colourless C. with a black head.

k. Maple.

1. The leaves eaten by a pale yellow C. with a green line down the back.

3. *Injurious to fruit trees and shrubs.*

a. Apple.

(1.) A pale green C. with white lines, eats the young leaves.

(2.) Blossoms—These are eat by the former C. and by a little black C. which proceed from eggs fixed round the ends of the smaller branches.

Destroyed by smoaking the trees.

(3.) The young fruit is eaten by some kind of grub near the stalk which occasions their falling off the tree.

(4.) A small blite insect, that spins a fine cottonny down, draws the sap of the bark, making it crack and fall off, and speedily kills the tree. This insect is said to have been introduced with the Po-Poplar. In China is an insect whose description comes very near this, and from the down of which the inhabitants procure an useful white wax—a few small drops have been obtained by heat from that on the apple-tree.

b. Pear.

(1.) The blossoms by the same Caterpillars as the apple.

c. Apricot,

(1.) The leaves by a small grey C.

d. Peach.

(1.) The leaves eaten by a greenish white C. with a black head.

e. Raspberry.

(1.) The leaves eaten by a yellow C. with a black head.

f. Red Currant.

(1.) The leaves eaten by a pale yellow C. with a black head.

g. Black Currant.

(1.) Leaves eaten by a white C. with a brown head; and a light green C. with a dark green stripe down the back.

h. Gooseberry.

(1.) Leaves eaten by the light green C. last mentioned.

i. Filbert.

(1.) The leaves eaten by a green C. with white lines and a brown head

2. The nut is eaten by a white maggot and the *Curculis Nucum*.
4. Injurious to the productions of the Kitchen-Garden.
The Americans about Philadelphia, fix small boxes at the end of long poles in gardens, about houses, &c. as a place for the Creeper (*Certhia Familiaris*) a bird common in England, to build in; as it has been supposed, that a pair of these birds, when they have young ones, have taken from the cabbage, fallad, beans, peas, and other vegetables in the garden, and fruit-trees, at least 600 insects in the course of one day.

a. Cabbage.

- 1 A yellow C. spotted with black, feeds upon the loose leaves, and two other C. one green, the other white with a row of black dots on each side, eats the close heads in holes like a honey comb.
- 2 A small white grub occasions tubercles on the roots.—Hemp sown round the beds, and beans between the cabbages, are said to prevent caterpillars.

b. Cauliflower and Broccoli.

- 1 A green C. feeds on the leaves; and also a pale yellowish green hairy C. which so injures the heart, that they never form heads, and become, as the gardeners term it, blind.—The only remedy is frequently examining the plants, and killing the caterpillars.

c. Radish.

- 1 The leaves of this is eaten by a small beetle. (*Chrysomela Nemorum*.)
- 2 The root by a white maggot with a sharp black head.

d. Beans.

- 1 The leaves by large black C. covered on the back with white hair, and on the sides, and near the head, with tawny; also by a pale green C. with a light red head.

e. Besides the before noticed insects, those innumerable small insects called *Blites* (*Aphis*), must be mentioned, there being scarce a tree or plant which is not injured by them.—If a few of those little beetles called

Lady-Cows (*Coccinella*) are put on a plant, they will free it of them.

The following singular mode of their generation will account for their being so numerous; a female once impregnated, can produce young, which will continue to produce others without any fresh impregnation, even to the fifth progeny; afterwards a new impregnation must take place.

IRRIGATION.

Is the *watering of pasture land* at will.

In Spain they thus treat arable land.

1. If the land *slopes*, a drain is cut along the side of the hill, and a spring or small stream led along it, which is made to overflow the side, by the end of the ditch being dammed up by a sod; but as the water would soon cease to run equally for any great length, and would wash the land out in gutters, it has been found necessary to cut small parallel trenches at distances of 20 or 30 feet, to catch the water again, and each of these being likewise stopped at the end, lets the water over its side, and distributes it until it is caught by the next, and so on over all the intermediate beds to the main drain at the bottom of the meadow, which receives the water, and carries it on to water another below; or, if it can be so contrived, another part of the same meadow on a lower level.
2. If the land is *flat*, the first object is to consider, how the water is to be got off when once brought on; and in such situations this can seldom be done without throwing up the land in high ridges, with deep drains between. A main carriage being then taken out of the river at the higher level, so as to command the tops of these ridges, the water is carried by small trenches or carriages along the top of each ridge, and, by means of moveable stops of earth, is thrown over on each side, and received in the drains below, from whence it is collected into a main drain, and carried on to water other meadows, or other parts of the same meadow below. One tier of these ridges are usually watered at once.—The ridges are usually 30 or 40 feet

wide, or, if water is abundant, perhaps 60 feet, and 9 or 10 poles in length.

3. WATER.

a. How applied.

- 1 Early in November, after a shower, turn the water over the land for about three weeks.
- 2 In December and January the chief care consists in keeping the land sheltered by water, from the severity of frosty nights.
- 3 In February, if the water remains for many days, a white scum arises, very destructive to the grass; and if the land is exposed, without water, to severe frosty nights, the greater part of the grass will be killed.—The only way to avoid this is, to take the water off, and turn it over at night; or to take off the water early in the morning, and if the day be very dry, the frost can do no injury; for it is only when the grass is wet, that the frost has this pernicious effect.
- 4 Early in May, when the spring feed is eaten off, the water is used for a few days, and again when the hay is carried off.

b. Quality of the water.

- 1 Thick and muddy water the best, especially what is obtained in autumn.
- 2 Clear and simple water, especially if it proceeds from a spring in the same field, produces early and plentiful grass, but not of a good quality; and the land remains unimproved after many years watering.
- 3 Water running from mines, being impregnated with vitriolic acid, &c. is highly inimical to vegetation.

4. THE ADVANTAGES OF IRRIGATION.

- a.* It is supposed to act as a hot-bed, and produces early grass.
- b.* In a very dry summer there is nearly as much grass as in a more favourable season.
- c.* The land thus treated is continually improving; its herbage, if coarse, is fined; its soil, if swampy, becomes sound; and an addition is made annually both to the depth and quality of its mould.
- d.* In a year not particularly favourable, the spring-feed of a field about six and a half acres, let for seven gui-

neas, and well supported 150 sheep for two months; the hay was sold for thirty-two guineas; and the aftermath for six.

JUNIPER. (*Juniperus Communis*.)

Culture, &c.

1. SOIL.

- a.* Grows naturally in woods and on heaths, and on the side of mountains.

2. INCREASED.

- a.* By sowing the seed in March, which will come up in two months; some recommend their being sown as soon as they are ripe.

3. TREE.

- a.* Is easily transplanted; the time the beginning of October.
- b.* Has grown above 40 feet high.
- c.* Grass will not grow beneath it, but the meadow oat destroys it.
- d.* The wood is hard, durable, and of a reddish colour.

4. USE.

- a.* The wood, when large enough, is used in marquetry, and veneering, and in making cups, cabinets, &c.
- b.* The bark may be made into ropes. In warm climates there sometimes exudes from its clefts a resinous gum, called by the *Arabs*, *Sandaracha*, which is used in varnishing. In England it exudes a hard fat juice, and not much gummy.
- c.* In *Carniola*, and some parts of *France*, the inhabitants make a wine of the berries steeped in water. In *Norway* a very valuable oil is extracted from them. The *true Geneva or Gin*, is a malt-spirit, distilled a second time with the addition of *Juniper-berries*.—The berries are two years in ripening.
- d.* The shepherds in *Spain* cure the scab in sheep with an ointment made of the trunks and roots, by breaking them into small pieces and infusing them in water, without adding any thing else.

IVY.

1. Common Ivy. (*Hedera Helix*.)
 - a. The leaves are gathered by shepherds for feeding ewes, whose milk they increase.
Are said to cure the rot and red-water.
 - b. The roots are used by leather-cutters to whet their knives upon.
 - c. Binds dry walls.
 - d. Anglers anoint their baits with an oil drawn from the berries by expression or infusion.
2. Ground Ivy. (*Glechoma Hederacea*.)
 - a. The leaves are thrown into the vat with ale to clarify it, and to give it a flavour.
Ale thus prepared is often drank as an antiscorbutic.
 - b. The expressed juice, mixed with a little wine, and applied morning and evening, destroys the white specks upon horses' eyes.
It is said to be hurtful to horses if they eat much of it.

KELP

Is a lixivial salt, obtained by the burning of seaweeds, and consists chiefly of the fixed vegetable alkali, in a pretty caustic state.

I. SEA-WEEDS.

- a. The three numerous genera of *Fucus*, *Ulva*, and *Conferva*, is capable of burning to afford Kelp; but the four following plants produce the most; viz. Sea Oak (*Fucus vesiculosus*); Bell Wrack (*F. nodosus*); Serrated Wrack (*F. serratus*); and Tangle (*F. digitatus*).
- b. It is observed of these plants. 1. That they are always of a quicker growth upon shores exposed to a current than in more quiet water; 2. That the weeds which grow in currents afford a larger proportion of Kelp than those which grow in dead bays; and, 3. That the weeds which grow where there is much fresh water, neither yield so much Kelp as where the water is perfectly salt, nor of so good a quality.

c. The cultivation of fuci upon shores becoming an object of some consequence, it has therefore been recommended to cover the gravelly, sandy, or fleecy shores, especially near the mark of ebb; with loose stones, from 2 to 300lbs. weight, or upwards, and not more than 2 feet distant from each other.

Various kinds of stones have been tried, as whin-stone, sand stone, and lime-stone; this last is by many reckoned the best, and next to it whin-stone.—A beach treated in this manner, will, in four years, yield as good a crop as the natural shore.

d. They are cut from the rocks in the months of May, June, and July; and should be dried as quickly as possible, and burnt as soon as they are ready for the kiln.—Care should be taken to prevent all sand, earth, shells, &c. from mixing with them.

2. KILN.

a. The common kilns are generally about 4 feet diameter, and 9 inches deep; and the mass of kelp burnt at a time, is usually from 1 to 300lbs. weight.

3. USE.

- a. In manufacturing of glass, soap, and allum.
- b. In bleaching of linen cloth.
- c. As a manure.

KIDNEY-BEANS. (*Phaseolus Vulgaris*.)

RUNNERS.

1. Rising without seed lobes, and having scarlet flowers.

a. Common-Seeds black and purple; continues to bear till the frost sets in.

b. West India-Seeds smaller than the last, and wholly black: brought from Antigua, and has been cultivated two years in England; is a great bearer, some of the flower stalks having near thirty flowers on them.

2. Rising with seed lobes.

a. Large Dutch.—Flowers and seeds white; grows as high as the common scarlet.

b. Common white.

c. Blue beans.—This is common to most of the West India Islands; it grows well in England; is a weak plant, and an indifferent bearer, having only about

seven flowers on a stalk ; the seeds are about half an inch long, of a wide compressed shape, and of a cream colour marked with black lines and dots ; flowers a reddish lilac.

d. Seeds purple speckled with pale yellow ; pods about seven inches long.

e. German—Several kinds were brought from Germany to this country in 1801, when the English seed was so scarce as to sell for five shillings per quart ; none of the seeds were spotted, but varied in colour, as deep red, orange yellow, pale yellow, light brown, white, of the last one sort was of a narrow kidney shape ; the flowers of all were white ; they bear well, but the pods very soon swelled with the seeds.

f. Switzerland—Pods very large.

g. Sparrow's egg—This has a light purple flower, the seed small, roundish, and of a bluish white marked with brown ; pods small.

Culture, &c.

1. SEED.

a. Sown from May till the beginning of July.

b. Planted about 5 or 6 inches apart, and an inch deep ; the drills for the larger kinds to be 5 feet asunder.

2. PLANT.

a. Require long poles, pea-sticks, or pack-thread pegged tight in the ground, and fastened to the top of a wall, or other fence.—The Scarlet and Dutch will grow upwards of 15 feet high.

b. The plants to be earthed up ; and when the roots are exposed to the sun, covered with fresh horse dung.

c. Those without seed lobes may be sown earlier than those with ; for if the first shoot be cut off by the frost, the root will throw up two or three more

DWARFS.

1. Seeds *white*—Of this colour there is the early, and two late sorts, called the Canterbury and Battersea ; these produce their flowers near the root, and bear well for some time ; the Battersea is the forwardest, but the other continues bearing longer.

2. Negro, seed *black* ; a hardy kind, and good bearer.

3. Black or purple, speckled with white or yellow; hardy, and a good bearer; flowers purple, or flesh colour; pods above 5 inches long.
4. Red and white; flowers white.
5. Yellowish green.
6. American—Brought from Boston in New England; the seed of the size and shape of a horse bean, and of a dull purplish red colour; flower flesh colour; a weak plant, and indifferent bearer.
7. German—The seed is about the size of that of the tare; white, and of a roundish shape; flowers white; branches long, weak, and straggling; pods only $2\frac{1}{2}$ inches long.
8. Chinese—The seeds of this, when first brought to England, were of a reddish yellow, marked with darker lines of the same colour; but in the first year of cultivation in England, they changed to white with deep purple lines.—Is a good sort of bean, and bears well.

Culture, &c.

1. SEED.

- a. Sown in hot-beds from January till March—They should have but a moderate heat, much room, and as much air as can safely be admitted to the plants.
- b. Sown thick in pots in April and May, and the pots plunged in a hot-bed; and when the beans are an inch or two high, transplanted in rows, in a warm border.—A fortnight is gained in their growth by this method.
- c. The early kinds to be sown on a warm border in April; and all kinds in the open ground from May till August.
- d. Sown an inch deep and 4 inches asunder, the rows from $2\frac{1}{2}$ to 3 feet apart.
- e. In dry hot weather first water the drills, or soak the beans—To preserve the seed from too much wet in rainy weather, draw a drill, and plant alternately on each side.

2. PLANT.

- a. To be early earthed up.
- b. No beans should be gathered from plants intended to save seed from, which should be of the best sea-

son; when ripe they should be pulled up by the roots and hung to dry, before the seeds are threshed out.

3. USE.

- a. The green pods boiled.
- b. The seeds are eaten like beans before they are hard, and also when dry, in soups, for which purpose they are much used on board foreign ships.

KITCHEN-GARDEN.

1. Should be exposed to the sun, and not overshadowed with trees or buildings.—A plantation (at some distance) to defend it from the N. Wind, will greatly preserve the early crops.
2. The soil should be of a pliable nature and easy to work; but by no means wet; and two feet, at least, deep.
3. Should be as near the stables as possible, for the conveniency of carrying the dung into it.—Gardeners near London manure generally twice a year.
4. An acre and an half is necessary for a small family, and four or five for a large one.
5. Should be walled in, both as a defence, and for wall fruit, 10 or 12 feet high.
6. The best shape for the quarters, a square or oblong bed 28 feet wide divided by walks; the mean one 6 or 10 feet wide, and the bye ones from 3 to 4 feet; the best materials a binding sand or road stuff, as they can be easily cleared of weeds with the Dutch hoe.—A border next the S. wall should be made 8 or 10 feet wide for early crops; and no tap-rooted plants should be raised near fruit trees.
7. All refuse leaves of cabbages, &c. should be carried off the ground and given to cattle, or they will give a bad smell to the garden.

The art of gardening was introduced into England from the Continent, about the year 1509; prior to which time, most of the present produce of our kitchen-gardens were imported from the Netherlands.

Broad-leaved LABURNUM. (*Cytisus Laburnum*.)

Culture, &c.

1. SOIL.

- a.* Will grow very well upon a poor shallow soil, and in exposed situations.

2. INCREASED.

- a.* By seed; which if sown in March the plants will appear the following month. If sown in autumn, not till the following spring—Will grow 12 feet high in four years.
- b.* As the breaking or cutting of the roots greatly retard the growth of the tree, it is best to sow the seed where the tree is to remain.

3. TREE.

- a.* Grows to a large tree with a straight stem.
- b.* The wood is very hard, of a fine colour, and will polish very well; it approaches near to green ebony.
- c.* Hares and rabbits are great enemies to these trees, by barking them in winter.

4. USE.

- a.* It is frequently used on the Continent, and in the highlands of Scotland, for making different kinds of household furniture; as chairs, tables, and bedsteads, which are said to equal the finest mahogany in beauty. The wood is also used for veneering.

This tree, as an ornament to our gardens, has been supplanted by the Long-spiked Laburnum, which, having longer bunches of flowers, is more ornamental; its not growing so large and strong is also another recommendation. The first is known to many by the name of Caledonian Laburnum.

LACTOMETER.

An instrument invented by the late J. Dicus, of Liverpool, for ascertaining the *goodness of milk*: It professes to discover,

1. What breed of Cattle are most advantageous.
2. What food is best in the Winter Season.
3. What the effects of the different Pastures may be.

4. How far particular Farms are best adapted for making Butter and Cheese.
5. How far the inconvenience, particularly in Cheshire, of Large Cheeses, in some Dairies being too rich to stand, may be prevented, by discovering when the Redundancy of Richness exists in the Milk.
6. And if thought proper, for fixing a *Standard* for the sale of this useful Article of Life.

LAMBS.

Are generally weaned in three months, the males having been castrated early, unless in case of great weakness, when the operation is better deferred awhile. After weaning, the dams may be milked two or three times, to ease their udders.

House-Lamb is thus reared—The ewes being brought to lamb about Michaelmas, the lambs are kept in the house with great care and attention; the mothers are turned in every night at eight o'clock, to their offspring; at six in the morning the mothers are separated from their lambs, and turned into the pastures. And at eight, such ewes as have lost their own lambs, and those ewes whose lambs have been sold, are brought in, and held by the head till the lambs by turns suck them clean; they are then turned into the pasture; and at twelve the mothers of the lambs are driven into the lamb-house for an hour, in the course of which time each lamb is suckled by its mother; at four, all the ewes that have not lambs of their own, are again brought into the lamb-house, and held for the lambs to suck; and at eight the mothers are brought to them for the night.—Chalk (usually previously baked in an oven) both in lump and powder, is provided for them to lick, in order to prevent looseness; and against gnawing the boards, or eating each other's wool, a little wheat straw is placed, with the ears downwards, in a rack within their reach, with which they will amuse themselves, and of which they eat a small quantity.

It is said to be the practice in some parts of England for the lambs to suck cows.

LARCH. (*Pinus Larix.*)*Culture, &c.*

1. SOIL.

- a.* Grows better on cold, meagre, gravelly, or stony lands, provided the roots can find depth to penetrate downward, than on a rich moist soil.

2. INCREASED.

- a.* By seed—Some recommend to bury a whole cone at a depth of 3 inches, and not to sow single seeds.
b. By young plants which spring from the stumps of old decayed trees.

Two years old the best age for transplanting; and immediately after shedding the leaf, the best time.

3. TREE.

- a.* Grows slowly the first four years; but in 20 years will exceed a fir tree in girth and height, that is doubly older.

One planted in Scotland in 1734, (the size when planted not mentioned) was, 54 years after, 7 feet 6 inches in circumference 3 feet from the ground; 97 feet high; and its cubic contents 130 feet.

- b.* The most proper season for felling Larch, as well as other Firs, is in the month of July and August; as the liquid which oozes out at that time of the year, almost immediately turns to a sort of resin, which operates as a stiptic; so that the wood is not so much drained as at other seasons, but hardens and comes into use sooner.

- c.* The wood reckoned equal to the best Norway Fir.

4. USE.

- a.* Is of singular use in strengthening the wooden framework of bridges, or, where there is occasion to mortice woods into walls or earth. Under water it almost petrifies, and is capable of supporting a surprising weight.
b. Houses built with it are said to look white for two or three years; after which the outside turns black, whilst all the joints and chinks are closed with resin, extracted from the pores of the wood by the sun's heat, which resin forms a kind of varnish, hardened by the

air, and of a bright polish no-ways unpleasing to the eye.

- c. No wood affords such durable pipe-staves for casks, which, at the same time, preserves the good taste of wine.
- d. In the general view of the agriculture of Perthshire mention is made of a Larch hedge.
- e. The bark, upon incision, yields the purest *Venetian* turpentine.
- f. The large branches produce several small grains like sugar, which, possessing the purgative quality of *manna*, has likewise obtained its name.

The Larch is a native of the Alps and Pyrenean mountains.

"It is now much propagated in Scotland and England; many millions of plants yearly. See Mr. Anderson's very high commendation of it, and very excellent account of its most valuable properties, in his 3d vol. of *Essays on Husbandry*."

"It is also a native of Nova Scotia, and by the inhabitants is frequently called Hackmatack. A Beer far superior to Spruce beer is made of it by the inhabitants of Nova Scotia."

LAVENDER. (*Lavandula Spicata*.)

Culture, &c.

1. SOIL.

- a. A dry, gravelly, or stoney soil, produces the strongest scented kind.
- b. Will not survive the winter in a light, rich, moist soil.

2. INCREASED.

- a. By slips; planted in March in a shady situation, or shaded by mats; when they have taken root to be exposed to the sun, and when they have obtained strength, removed to where they are to remain.

3. USE.

- a. From the flowers is distilled a water; and an oil is also drawn from them.

The oil has lately been used with other ingredients; in making a permanent black, and red ink.

LEEK. (*Alium Porrum.*)

Var. 1. London Leek. 2. Common L. 3. French L.
Culture, &c.

1. SOIL.

a. Requires good dry ground.

2. SEED.

a. Sown in March—Should be sown before the ground is raked, and in a light soil trod in.

b. Sown thin with onions. The onions to be drawn out in August, which will leave full scope for the leeks to grow to a large size.—The two frequently sown in equal quantities.

3. PLANT.

a. To be planted in June or July from the seed bed into open ground, in rows 8 or 9 inches asunder, and about 6 inches between the plants.

b. In September the leaves to be cut off at half their length.

c. For seed, plant some of the best roots about 8 inches asunder in rows near some warm hedge, pale or wall; and support the stalks with stakes; when ripe, the head should be cut off, and hung in a dry place till after Christmas—The seeds are easiest got out by rubbing the head hard against a rough tile.

If seed is saved from old roots it will degenerate.

4. USE.

a. As a culinary herb.

LENTIL. (*Ervum Lens.*)

1. Common Lentil.

2. French Lentil, or Tills.

This is twice the size of the former, both in plant and seed, and is supposed to be a distinct species.

Culture, &c.

1. SOIL.

a. Affects a dry soil.

2. SEED.

a. From one bushel and a half to two bushels broad cast—The time March.

- b.* Drilled one foot and a half asunder, to allow room for the Dutch hoe to clean the ground between them.
- c.* Sown with oats or barley, in the proportion of two bushels of lentils, mixed with one bushel of oats or barley—Some sow only half a bushel with oats.

3. USE.

- a.* The seed for soups; and for feeding pigeons, and swine.

In times of scarcity, Lentils have been ground either alone, or mixed with barley, for making bread.

- b.* Fodder for cattle. Horses soon grow fat upon them.

When grown with oats or barley, should be mown when they are in full sap, and when well saved, are an inviting food, though of a hot and feverish nature.

LETTUCE. (*Lactuca Sativa*.)

- 1. Cos—White, green, Egyptian, brown, spotted, dwarf.
- 2. Cabbage—Common, Hammersmith, brown Dutch, Silesian, Grand Admiral, Roman, Button.

The Cos Lettuce differs from the Cabbage Lettuce, in having longer and narrower leaves.

"The *Imperial Lettuce* of the Germans near Philadelphia, seems best for *Country Gardens*; lasting long, with little attendance."

Culture, &c.

1. SEED.

- a.* To be sown on hot-beds in January and February—The seedling plants to be pricked into a gentle hot-bed, to forward for final transplanting.
- b.* In the natural ground—On a warm border in January and February; and in the more open ground till September; the plants from the September sowing to be planted till November, either on warm borders in frames, or in beds; and to be sheltered by mats for winter and spring use.
- c.* Sown in spring with Onions.

2. PLANT.

- a.* In frames or under hand glasses, give the full air in all mild dry days, and defend with the glasses at nights, and keep close in frosty weather.

- b.* Force in January the largest plants in borders, by transplanting them into hot-beds.
- c.* In February or early in March if the weather is mild, transplant from the second hot-bed, into warm borders.
- d.* In open ground should be planted at 1 foot asunder, and well watered; generally a drill is drawn to prevent the water running from the roots.
- e.* Cofs lettuces should have their leaves tied together with bafs, to forward their cabbaging.

3. USE.

- a.* As a fallad herb.
- b.* A drug like opium is obtained from the milky juice—It is also procured from the strong-scented Wild Lettuce, (*L. Virofa*), by catching it in shells, and drying it in a gentle heat. This plant grows wild in hedges &c.
- c.* The refuse leaves are good food for geese and ducks.

LIME-TREE. (*Tilia Europæa.*)

Culture, &c.

1. SOIL.

- a.* The best a good loam.

2. INCREASED.

- a.* By seed, which produces the best trees.
- b.* By layers—the time to lay them down, and to remove them, is when the leaves begin to fall.
- c.* By cuttings.

3. TREE.

- a.* Grows to an immense size, and attains a great age. Millar measured one which was near 10 yards girth 2 feet above the ground, and was then in a thriving state: and Sir T. Brown mentions one which grew in Norfolk, that was 16 yards in circuit $1\frac{1}{2}$ feet above ground, in height 30 yards, and in the least part of the trunk it was $8\frac{1}{2}$ yards.
- b.* The wood is light, smooth, of a spongy texture, and does not easily bend.
- c.* Will grow if planted upside down, when the branches will become roots, and the roots put forth leaves.

4. USE.

- a. The wood is used by carvers; and by architects for framing the models of their buildings; the turner makes light bowls, dishes, &c. it also serves for wainscoting rooms, but it is too soft for any strong purposes.
- b. Makes the best of charcoal for gunpowder, and for designers.
- c. The twigs are fit for making *baskets*.
- d. In Norway the peasants *make with the bark*, very elegant *butter-baskets*; likewise when macerated, *lines* for husbandry and for fishing; of the *inner bark* is made the *bass-mats*, so useful to gardeners; "and should therefore be propagated."
- e. The sap inspissated affords a quantity of sugar.
- f. The flowers are reckoned among the best for bees to collect honey from; and an artificial wax has been obtained from them by a chemical process.
- g. Are planted for clipped hedges; and from their early leafing, and the fragrancy of their flowers, are peculiarly proper for public walks.

LIQUORICE. (*Glycyrrhiza Glabra.*)

Culture, &c.

1. SOIL.

- a. Requires a light sandy and very deep soil, which should be well manured, and dug three spade deep.
- b. Grows in Spain on low grounds near rivers.

2. INCREASED.

- a. Seldom by seed, which rarely ripens in England.
- b. By plants taken from the sides or heads of the old plants, each having a good bud or eye; and should be 8 or 10 inches long.

They are to be planted in February or beginning of March, so deep that the head should be about an inch under the surface; the plants about an inch asunder, and the row 2 or 3 feet apart; or on ridges 3 feet wide, on which are 3 rows; and the plants 3 or 4 inches apart, according to the soil.

3. PLANT.

- a. The first year onions or carrots may be sown, but kept well weeded—This is allowed rather to hurt the

crop—Early lettuces may be planted each succeeding year between the rows; and coleworts the first year for autumn use.

b. In October, when the young shoots are decayed, the ground is to be covered with rotten dung, which is to be lightly dug in between the rows in March.

c. The roots should remain three years in the ground after planting, and not dug up till the stalks are perfectly decayed; for when it is taken up too soon, it is subject to shrink greatly, and lose of its weight.

d. May be planted among shrubs.

4. USE.

a. Is cultivated for medicine.

The following is the method of extracting the juice of this plant, at Corigliano in Italy—The root is cut into pieces, moistened, and crushed in a mill; being by this means formed into a mass like dough, it is put into a boiler, and boiled for eight hours; during that time they pour water on it, it is then twice pressed, and the resinous juice squeezed, which must then be boiled in another cauldron for 24 hours, to give it the proper degree of toughness; after that it is cut into cakes or squares, and packed in chests with bay-leaves, for sale in England, &c.

b. Is the basis of an agreeable liquor, called *Ptisan*.

LOCUST-TREE. (*Gleditsia Triacanthus*.)

Culture, &c.

1. SOIL.

a. A deep loamy soil, and sheltered situation; for when they are much exposed to winds, their branches are frequently broken.

2. INCREASED.

a. By seed received from North America, which must be sown in the spring upon a bed of light earth, and if the season be dry frequently watered; otherwise they will not come up the first year.

3. TREE:

a. Should not remain in the nursery more than two years, as it will not bear removing when large.

Late in the spring the time for transplanting.

b. Grows in England to a large size; and is of a very quick growth.

4. USE.

a. It makes excellent timber.

This tree is frequently called, Three-thorned Acacia.

LOVE-APPLE. (*Solanum Lycopersicum.*)

Culture, &c.

1. SEED.

a. Sown on a hot-bed in March.

2. PLANT.

a. In April the plants are to be pricked out into a second hot-bed 4 inches apart, and in May into a warm border 5 or 10 feet distant.

b. Unless the plants are trained up a wall or stakes the fruit will not ripen.

There are two varieties, one with yellow, the other with red fruit.

3. USE.

a. The fruit in medicine; also for sauces, soups, and pickling.

"It is called by some Tomato."

LUCERN.

1. Lucern. (*Medicago Sativa.*)

Var.—With violet-coloured flowers (this is the best to cultivate); with yellow flowers; with yellow and violet flowers mixed; with variegated flowers.

2. Yellow Medic or Butterjags. (*Medicago Falcata.*)

Withering says this plant, which grows wild in hot, dry, barren, sandy places, is well worth the trouble of sowing for the purpose of making hay; a practice long since adopted in some parts of Sweden.

Cows, Horses, Goats, and Sheep eat it.

Culture, &c. of Lucern.

1. SOIL.

a. Requires good land; as a deep rich dry loam.

2. SEED.

a. Drilled in rows, from 1 foot to 18 inches or 2 feet distant, and the intervals horse-hoed.

b. Sown in Kent broad-cast, and said to last 20 years.

- c. Barley sown with it, but not too thick, least it should injure the young lucern.
- d. Drilled 1 foot asunder on a field sown with buck wheat when the last was off, the spaces between the rows cultivated with the horse-hoe.

3. PLANT.

- a. Will last from 15 to 30 years.
- b. Hay made of it—Is less hurt by the scythe than by feeding.
- c. In Spain they cut one day what will be wanted the next, and laying it in a heap, sprinkle it with salt water. This they think renders it more wholesome to cattle, which like it the better for being salted.

4. USE.

- a. For cutting and carrying to horses, cows, and black cattle, is preferable to any other grass: an acre of it in good ground, will, from early in May to Michaelmas, maintain twice the number of cattle that an acre of good meadow will. The Lucern field is, however, in effect, a stubble from October to May.
- b. Sheep thrive upon it, and Swine fatten without any other food, but the last do not like it so well if cut for them.

It has been supposed that the roots which are extremely large, and afford a saccharine juice, would be very nourishing to some sorts of animals.

Lucern and Saintfoin were first introduced into England from France in 1653.

"Lucern is too costly in its culture for other than lots or small pieces of it. It is no where in field-husbandry."

MADDER. (*Rubia Tinctorum.*)

Is of several sorts, differing greatly from each other in appearance and value. The Turkey is more vigorous and of a darker green than the common sort; it likewise produces abundance of seed which the common sort does not; it also puts out many vigorous and solid runners, whereas the runners of the common kind are hollow, and produce none of the best part of the Madder, which is contained in the woody part of the root,

Culture, &c.

1. SOIL.

- a. A deep light soil.
- b. In Holland it is planted on strong heavy land.

2. INCREASED.

- a. By young shoots taken from the mother plant, with as much root as possible.

3. PLANT.

- a. The shoots to be planted with a dibble in April or May, 1 foot apart; those in the second row to be opposite the middle of those in the first row; the second row to be $1\frac{1}{2}$ foot from the first, and the third 5 feet from the second; thus there will be a third row at five feet distance from the second, and at $6\frac{1}{2}$ from the first; the line is then to be moved $1\frac{1}{2}$ foot, and another, being a fourth row, is to be planted opposite the middle distance of the last; and in this manner the whole ground is to be planted—If the season is dry the sets must be watered.
- b. To be carefully weeded.
- c. Are sometimes dug up the second year, but more generally are allowed to grow three summers.

4. USE.

- a. For dying and staining linens a red colour—A simple and certain method has been discovered of procuring from it, of the greatest beauty and solidity, the colour called *Adrianople* red.
- b. Fodder for cattle.

In Miller's Gardeners' Dictionary, we have a very full account of the method of cultivating Madder in Zealand, with a figure of the plant, and plans of the kilns and houses for pounding and curing it.

"Better accounts are since given in the late books of husbandry. *Arbutnot* was the chief madder planter of the best sort in England."

MAIZE. (*Zea Mays*.)

- 1. India Maize—Grows 8 or 10 feet high; the ears before they are quite ripe are eaten, roasted.
- 2. Portugal Maize. This grows also in Spain and Italy—These two are cultivated in our gardens, more for

curiosity than use; and are sown on a moderate hot-bed in March or April, and transplanted into the open ground in May.

3. German Maize. This has been cultivated in the field, both in England and Ireland, with success.

4. North American Maize. The Americans cultivate five or six sorts, which grow of different heights. A short kind, called Mohawks-Corn, ripens its seed in the more northern parts though sown so late as June.

The American seed varies very much in colour, and that not only in the same field, but in the same ear: this may be prevented, by sowing only one colour, at a good distance from fields containing another coloured corn.

Culture, &c. of German and American Maize.

I. SOIL.

a. Thrives best in a light and sandy soil.

b. Is a great impoverisher of land; especially, if the land is not ploughed when the corn is cut.

2. SEED.

a. To be sown the latter end of March in light warm ground; and in cold ground the middle or end of April.

b. There are *different ways* of sowing the seed, viz.

1. Having levelled the ground, little hills are raised in crossings at 3 or 4 feet distance, into each of which is put 2 or 3 good seeds, and covered about an inch thick with earth, continuing to do the same till the whole ground is planted.

2. At the third ploughing the furrows are made a foot and a half asunder, (and the clods broken) and holes made at the same distance in the bottom of them, and two grains dropped in each; when both grow, the weakest to be pulled up, and where both fail, fresh grains to be sown—In the second furrow, &c. the holes to be made so that the plants may grow in form of a *quincunx*.

3. Single furrows about six feet distant through the whole field, these crossed at the same distance; where they meet, the corn to be thrown in and covered, either with the hoe, or by running another furrow with

the plough. When the weeds begin to overtop the corn, the ground between to be horse-hoed or *ploughed* over to bury them—this is to be repeated, as the ground is thereby better loosened than with the hoe.

4. Sown *thick, for fodder*—In this case, all the female flowers are barren, and produce no grain.

3. PLANT.

a. Must be hand hoed and horse hoed repeatedly, and kept free from weeds.

The seeds of several plants are sometimes sown between the corn, as kidney-beans, and the homony bean to run up its stalk, &c.

b. When cut, the ears are to be gathered by hand with their sheath on, and laid in the air for the seed to harden; and afterwards freed of the sheath, and spread on a barn floor.

c. The grain is either threshed out with a flail, which breaks and bruises it; or the ears rubbed hard against the edge of a flat piece of iron, which easily separates the grain from the husks, without hurting them.

d. This plant is particularly adapted to the horse-hoeing husbandry.

4. USE.

a. The grain is either eaten whole, or ground into meal for bread; in making of which, some add a half, or a third of Wheat or Barley-flour: The grain is also malted for beer; and answers very well for feeding of cattle, poultry, and swine.

b. The whole plant (after harvesting the corn) as fodder for cattle: "The stalks cut up are rich fodder."

c. Mowed green and made into hay.

d. The stalks answer the same purposes as reeds in making of fences.

An Agricultural Society has been lately established at *Margate* for the express purpose of growing *Indian Corn*—It appears that some plants have been produced in that neighbourhood, equal to what has been seen to grow in America or the West Indies.

MANGEL-WURZEL or SCARCITY-ROOT.

(Beta Vulgaris. ?)

1. SEED.

- a. Sown in April or May.

As this is only a variety of the common Beet, great attention should be paid to the kind of seed sown.

- b. One or two seeds dropped in each hole, and the distance of the holes from 8 to 18 inches.

A short roller has been invented with wooden pins or pegs to dib the holes.

2. PLANT.

- a. Not a hardy plant.

- b. Will not bear transplanting.

- c. The roots grow to 18 inches in circumference, and 22lb. weight.

- d. Insects never injure either the roots or leaves.

3. USE.

- a. Cows, horses, sheep, and hogs, are fond of the leaves; which must be cut off the plant for cows and hogs, both of which are said not to like them fresh.

- b. Cattle eat the roots, but they must be cut in pieces for them, being very hard and firm.

- c. Gives a superior sweetness to cream and butter.

The quantity not so great as from cows fed upon turneps, or the turnep-rooted cabbage.

- d. The leaves eat like spinach.

- e. The stalks of the leaves are dressed like Asparagus.

(See Beet, p. 33.)

MANURES.

1. ANIMAL.

- a. Horse-dung, stronger in towns than in farm yards.

- b. Ox-dung, best made by beasts fed with oil cakes and rape.

- c. Hogs'-dung, for cold wet clays.

A good manure for potatoes on a poor gravelly soil.

- d. Sheeps'-dung, it is observed that the dung of sheep is singularly beneficial to land, which has not been folded on before.

Dung of animals that chew the cud, being more thoroughly putrified than that of others, is fit to be mixed

with the soil without needing to be collected into dung-hills—This circumstance shews the utility of folding sheep on arable land, for manuring the soil.

e. Dogs'-dung accounted the next best dressing to pigeons'-dung.

f. Rabbits'-dung, procured by sweeping of warrens, was found, on a trial with pigeons'-dung, to be better, and more lasting as a top dressing on grass—2 loads to an acre.

The earth from an old rabbit warren is good manure.

g. Pigeons'-dung. Used on light land as a top dressing, viz. four quarters on turneps, four or five on grass, on wheat three quarters, on barley ten strikes; on limestone land two quarters per acre, ploughed in very thin with seeds.

Sown on strong land with wheat, and ploughed under furrow, proves very advantageous to the crop; but more than from 50 to 60 bushels per acre, would produce too much bulk of straw.

h. Poultry-dung. Not quite so good and hot as pigeons dung: a top dressing for corn and grass laid on about Christmas.

Is frequently mixed with chaff, malt-dust, short horse-dung, &c. by putting any of them under where these fowls roost, that they may incorporate and rot together, so as greatly to increase a large quantity of excellent hand-dressing.

i. Goose-dung. A good manure, and not noxious or disagreeable to cattle, as has been supposed.

"Geese penned on litter, yield considerable dung."

k. Wild-fowls'-dung—*Fowly island*, in Lancashire, a place so called from the abundance of wild-fowl continually found on it, is so enriched with their dung, that it fattens sheep in a surprising manner.

Is considered, in S. America, as a very rich manure.

l. Soil of privies, supposed to exceed every other kind of manure for the first year after it is laid on; in the second it is of some service; but in the third year its effects very nearly or entirely cease. Answers well on a cold, hungry soil.

On the continent, where it is more used than in England, it is kept till it has lost its fetid quality in

pits, for 1, 2, 3, or 4 years; that of 4 years they account the best, and that of 3 years tolerable, but the others not fit for use.

m. Fish—When herrings, pilchards, and mackarel, have been a drug upon the coast, they have been used as a manure, and have produced a very florid crop—On the coast of Norfolk the farmers have manured with a small oily fish called *Stuttles* (unfit for human food), sowing from 30 to 50 bushels per acre; they particularly repay for turneps followed by barley.

In some parts of Cambridgeshire, Sticklebacks (*Gasterosteus Aculeatus*) are used for the same purpose, at the rate of 20 bushels per acre.

n. Sea-Muscles, when tried as a manure, have, besides the difficulty of procuring them in sufficient quantities, been found not to be durable.

o. Shells.

(1) Shells collected on the sea shore, make stiff clays work better, and greatly improve the soil.

(2) Shell-lime, laid on thick, answers upon asparagus beds in winter.

(3) *Fossil-shells* are dug in sufficient quantity near Woodbridge, in Suffex, to be used as manure, 25 cart-loads per acre; dressing a hungry sandy soil for 7 or 12 years—This manure is called *Crag*.

(4) *Shell-Sand*, a rich manure.

Shells are burnt into lime in the following simple manner. A hole is made in the ground wherein they put furze, upon that wood, upon the wood small stone coal, and then a layer of shells, and so shells and coals, *stratum super stratum*, and then put fire to them.

p. Bones, broke or ground very small, said to be superior to all other manures; the quantity 60 bushels to an acre. It is thought a judicious practice to put a cart-load of ashes to 30 or 40 bushels of bones; when they have heated for 24 hours, to be turned; and after laying 10 days longer are fit for use. Whole bones are not of the least service.

At Sheffield it is now become a trade to grind bones for the use of the farmer—If bones are mixed in a heap of lime, they will in a short time be reduced to powder. The Chinese use the ashes of burnt bones as a top dressing to their rice fields.

g. Feathers (old ones may be procured from upholsterers) reckoned a good manure for arable land.

r. Furriers' chippings, sown by hand from the feed scuttle, on land intended to be sown with wheat or barley, and immediately ploughed in; after which the seed is sown and harrowed in. The quantity two or three quarters to an acre; answers well on dry light soils, but have little effect on wet—Rabbit clippings a good dressing, harrowed in with corn.

Such pieces as are left upon the ground must be pushed in, as dogs and crows greedily seize on them.

s. Hoofs forced into the earth with sticks, presently after the wheat, barley, or rye, is sown, at about 6 inches or a foot distant, is a dressing for six years to chalk, gravel, and loam.

t. Horn-shavings—1. Small or turner's-shavings. 2. Large or refuse pieces of horn. The first the best. Is used in the same way and quantity as the last article. The large is ploughed into the land three months before sowing wheat or barley. They answer in moist soils; except very dry ones, when they will not work.

The *cores of horns*, crushed in a mill, have been used as a manure.

u. Sheep's trotters, and fellmongers' cuttings, are used in the same way as furriers' clippings, from 20 to 40 bushels per acre. They need pricking in, as dogs and crows are very fond of them. Does not answer well on wet land.

v. Woollen-rags—these are to be chopped, sown by hand, and ploughed in three months before sowing of wheat or barley; the quantity from 6 to 10 cwt. per acre. In Kent they spread about a ton per acre, every third year, for hops. As they hold moisture, they are adapted for dry gravelly or chalky soils, and succeed best in dry seasons.

The danger of catching the small pox, in chop-

ping and sowing them, deters many farmers from their use.

w. Wool (the dirty locks, or trimmings, &c. of sheep) is used in Surry as a manure for hops.

x. Hog's hair a good dressing for light soils, harrowed in with wheat, rye, or barley.

y. Blood, according to *Evelyn*, is an excellent manure for fruit trees.

z. In Cornwall is used bruised and *decayed pilchards*, and the refuse bay salt used in curing of them, mixed with from 150 to 200 seams of sand and earth, with which they are left to ferment and incorporate, and is frequently turned over and mixed, before it is laid on the land.

After a dressing of this kind for barley, on some lands near the Lizard, it is said, that 90 bushels of barley, Winchester measure, have been produced on a statute acre; and it is not uncommon to have from 70 to 80 bushels; 75 bushels they consider as a middling crop.

2. VEGETABLE.

a. Sea-weed—The best is that cut from the rocks; when driven on shore, the best is the peasy sort; the worst, that with the long stalk; it is used either fresh, or laid up in heaps to putrify.

Is an excellent manure for gardens, and destroys all kinds of vermin.

On the shores of the island of Jersey grows a weed, called by the inhabitants *Uriac*, which they cut twice a year, in summer and about the vernal equinox: The summer *Uriac* is first dried well by the sun on the shore, then serves for kitchen fuel in country houses, and makes a glowing fire; and the ashes being carefully preserved, serve for manure; and is held equal to a like quantity of lime. The winter *Uriac* is spread and ploughed in, and is esteemed an excellent manure.

b. River-weeds, particularly the *Conferva*, (this plant resembles small fibres) succeed very well, when ploughed in for turneps or wheat, if the soil is sandy; but do not suit land that is springy, or liable to inundation.

c. Vetches, Buckwheat, Clover, Grey Peas, and Rape, are turned in upon old ploughed lands, and much benefit has been derived from their vegetable fermentation.

Turneps much injured by the frost, has been ploughed in as a manure, and answered. It has been supposed that they would prove a good smothering to seedling weeds on heaps of dung, and dug in assists fermentation.

d. Rape-cake, when used as manure for wheat, is reduced to a pulverised state, by means of two mills, worked by two women, each mill being formed of two cylinders, revolving towards each other: the first breaks the cake into pieces the size of a walnut, by the operation of cogged cylinders: the second is constructed of plain iron cylinders, similar to those used for grinding clay to make bricks.

e. Rape-dust, as a top dressing for turneps, 1000 weight to an acre.

Top dressings are either spread out of carts with a shovel, or sown by hand.

f. Malt-dust, is sown by hand, from 24 to 32 bushels per acre, with barley, and harrowed in with the seed. It suits most soils and seasons; quickly spends itself, and is therefore never sown with wheat.

Black malt-dust, or such as falls through the kiln plate in drying, is greatly preferred to the white, on account of the seeds of Charlock, &c. with which it abounds, being killed by the heat.

g. Malt-combs, for seeds and tillage, six quarter an acre for turneps.

b. Soap-boiler's ashes, or wood ashes, from which lye has been made, has a very good effect on cold sward or rushy wet land; laid on in autumn, three bushels.

i. Ashes procured by burning fern, stubble, bean-stalks, heath, furze, and sedge; also ashes from kilns where straw or furze are burnt; is used as a top dressing for corn and grass; should not be laid on in windy weather. Succeeds best just before rain or snow falls, as these wash them into the soil. Two loads are sufficient for an acre.

One load of dry ashes will be equally efficacious, with two loads that have been kept wet, and the salts thereby washed out.

k. Kelp-ashes, 40 bushels for an acre; the improvement by them very great.

Ashes defend plants from the depredation of *insects* and *slugs*.

l. Rotten-wood, and saw-duft when rotten, a very good manure for strong lands, because it loosens the parts of the earth, and renders it light.

m. Charcoal has been tried as a manure, but did not answer.

Is considered a good manure in N. America.

3. FOSSIL.

a. Clay.

(1) As dug; a better manure than marle on sand.

(2) Burnt; a good manure as a top dressing.

To burn it, make four gutters or funnels with stones or bricks, and in them place faggots or culm, over which put clay, and when one layer is thoroughly heated and burnt, add another. &c. till it is raised into a large mound.

b. Ose, sea-mud, salt clod, or sea-sludge, as it is variously called—A good manure.

c. Marle.

(1) White marle for light sandy soils, from 80 to 100 load to an acre, laid on clover and ray-grass, or ray-grass stubble or layer, a year before it is ploughed in; after the first dressing with marle alone, it is to be fixed with dung.

The goodness of marle determined by subsiding quick in water.

(2) Hard blue marle, 20 waggon loads, of 40 bushels each, laid on an acre, the good effect of which is said to be very apparent 30 years after.

Suits a light gravelly and dry chalky soil, and is used not only to restore, but to alter the nature of the soil.

(3) *Burnt*, and then bruised into a kind of powder, and sown as a top dressing, about 10 bushels to an acre.

It has been burnt in a kiln after the manner of lime; or laid over a gutter, under which faggots, &c. for fuel have been laid; it has also been burnt in a common oven.

d. Chalk, lightens clay and binds sand, 30 waggon loads of 40 bushels each, or 100 cart loads of 32 bushels each, laid on an acre; should lay on the ground great part of the winter, that the frost may make it run and incorporate the better with the soil; the benefit of chalk will last from 10 to 15 years.

The opinion that land once chalked would never be benefited by a second coat, found fallacious by experience.

Chalk is burnt into lime.

e. Gypsum, or Plaster of Paris, ground as fine as meal, an excellent top dressing on light soils, for lucern, saintfoin, and clover; six bushels per acre laid on in May. Gypsum is dug on Beacon Hill, near Newark, at the junction of the Trent and Soar; and also near Northwich, in Cheshire. The powder of both the English and French may be had in London.

f. Lime is of two sorts—1. That made from Magnesian Limestone, which is hot, and if laid on in large quantities, destroys vegetation for several years; it may be distinguished from the following by the slowness of its solution in acids. 2. Lime made of purely calcareous limestone; this may be laid on in large proportions, without diminishing the fertility of the soil—Twenty Winchester bushels, in flour, of the first, is reckoned sufficient for an acre, whereas double the quantity of the second has been directed.

If laid on alone, said to exhaust the soil of its most fertile juice and particles; is mixed by forming small heaps of lime, covered with a coat of earth; when the earth by its moisture has slacked the lime, the heaps to be opened, and as much farm yard dung buried in each as it will cover.

When lime is not immediately wanted it should be thrown up in ridges or heaps, and preserved from the weather, either by being thatched or covered with a cord of earth.

g. *Stones*—*Plott*, in his history of Oxfordshire, mentions the clippings of the stone they hew in the quarry at Hornton, near Banbury, as being a good manure; and *Dubamel* says the same of limestone on grass; the observations of the last, probably led the late Lord Kaims, with other commissioners of forfeited estates in Scotland, to erect a mill for grinding of lime-stone for manure; but it was unfortunately carried away by the burn which had worked it, and, consequently, it remains doubtful whether it would be advantageous to grind lime-stone for manure.

b. *Sand* for clay or bog; sea-sand (the goodness increaseth the farther from high water mark) the best, next what is washed down by rain on gravelly soils; dry and light the worst; small gritty gravel good.

One of our Agricultural Societies required to gain their *premium*, that 150 customary cart loads, containing 25 Winchester bushels of *sand*, should be laid upon an acre of clay; and the same quantity of clay upon an acre of sand.

i. *Coal-ashes*—open and meliorate clayey lands, and correct their ungenial qualities; should not be ploughed in very deep.

As a top dressing, from 50 to 60 bushels per acre; succeed well on clover, in March or April on dry chalky lands; also answer on sward, applied either in winter or spring, and destroy the rushes.

k. *Soot*—As a top dressing, scattered like grain, from 20 to 40 bushels per acre; if the land is manured, only half the quantity. Answers best on wheat in April; it likewise succeeds on peas, ray-grass, or clover, in the same month, and has a good effect sown with barley, in the beginning of April, and harrowed in. Three quarters an acre on wheat; sure to succeed on cold land. Good also for saintfoin and ray-grass.

Soot from wood is not near so good as from coals.

l. *Peat*.

(1) Peat-ashes, as a top dressing in the spring for corn, clover, grass, saintfoin, also peas, tares, and other succulent plants; the quantity per acre, 15, 25, 40 bushels; said to answer best on dry chalky soils—Seven

bushels of peat-ashes from Newberry, is equal to from 15 to 30 bushels from other places; hence the quantity of ashes per acre, must be regulated in proportion to the corrosive acid salt they contain after calcination. (2) Peat-dust, put to the same use as the last, is esteemed the best possible dressing for an onion bed.

The sward has been pared off, and when the peat was dug, relayed, so that the field became meadow land again.

- m. Black bog earth*; 60 loads of it has been laid on seeds with success; but tried on turneps did not succeed.
n. Salt—The good effect of it on grass visible 30 years after.

Supposed to be the most grateful to vegetation of all manures, and that cattle fed on the produce of land manured by it, will fatten in two-thirds of the time they will where salt is not used: the animal food to the person who eats of it, is much finer flavoured than where no salt is used as manure. It also makes corn uncommonly productive, the straw strong, and the grain thin hulled, heavy, and of a finer sample; it likewise sweetens four pastures, and makes the herbage come thick, (at first stops all vegetation) and considerably more in quantity.

Notwithstanding the above high character, there are those, who, after trying it as a manure, will not allow that it improves the soil, or makes vegetables grow.

"Quantity of salt, and *qualities* of the soil, make a difference. Too much salt burns; too little is ineffectual."

Destroys insects.

4. LIQUID.

- a. Stagnate water* from ponds into which drains run from stables, &c. a good manure for arable and pasture land.—Spread by means of a watering cart.
b. Fresh water. In many places land is floated at will with it, (see the Bath Agriculture Societies papers, vol. II. p. 85 and 142, for the method of watering pastures) and thereby raised two-thirds in their annual value; is supposed to act as a hot-bed; and produces early grass. See Irrigation.

c. *Sea water* applied to manures is found to possess powerful effects in promoting putrefaction, and would prove highly beneficial to all farmers near the sea side—A ton of sea water contains from a bushel to a bushel and a quarter of sea salt.

d. *Urine*. This calls for a careful management on all sorts of grass, corn, or tree roots, as it furiously assists or destroys, as it is discreetly or indiscreetly applied; its right use being not only in a small quantity, but at a proper season; in the first it should be no more than sprinkled; in the latter it is to be done in January, February, or before May is over, that the dry heat of the weather may not add to the fiery parts of the stale.

e. To prepare a very useful *liquid manure* for gardens—Put up a full bushel of fresh *pigeons'-dung* in an old bag, and immerse this in a hoghead of soft water; move the bag very much every day for a week, when it will be fit for use. It must be given to the flowers, plants, &c. as common water, only taking care that it is applied *to the roots only*, and not suffered to fall on the leaves and stems of the plants. The bag of pigeons'-dung will impregnate a second hoghead of water.

N. B. It is supposed this *liquid manure* may be applied with great advantage, to promote the early vegetation of the seeds of onions, carrots, cabbages, &c. In France wheat is steeped in a ley of poultry-dung.

It has been found, that after a farm has been long used to a settled course of manuring, variety is of great consequence; insomuch that the introduction of a new manure has operated greatly more than its proportion of the old one would have done.

Drilling and Horse-Hoeing has been supposed by some admirers of those implements, to make manuring unnecessary.

” The foregoing sorts and all sorts *manure* of accumulated in a general *compost*, answer best.”

MAPLE. (*Acer Campestre.*)*Culture, &c.*

1. SOIL.

- a. Will grow in any soil, but delights most in dry land, and flourishes more on hills than on plains.

2. INCREASED.

- a. By seed, which does not come up till the second year.
 b. By layers, suckers, and roots.
 c. By cuttings—These should be planted in autumn in dry ground, and in moist land in spring.

3. TREE.

- a. Will bear transplanting at any age.
 b. Nothing thrives under it, by reason of the honey dew which falls from it.

"The sugar maple is readily propagated by the seeds."

4. USE.

- a. The wood, on account of its lightness, is used to make musical instruments. When filled with knots and burs, is very much valued by the cabinet makers. It is also made into dishes, trenchers, &c. and the vessels may be turned so thin as to transmit light.

"The *Acadians* or old settlers of *Newa Scotia* make both wine and vinegar from the maple, as well as sugar."

MELON. (*Cucumis Melo.*)

1. *Cantaleupe*—The coat of this is full of knobs and protuberances; it never offends the most tender stomach.
2. *Romana*. This is a good Melon, and may be brought forwarder in the season than the former.
3. *Succado*. May be cultivated as an early fruit, but must give way to the *Cantaleupe* when that is in season.
4. *Zatte*. This is a good Melon, but seldom larger than an Orange. It is warted like the first, but has so little flesh, as to be scarce worthy the trouble of propagating.

5. *Small Portugal*, or *Dormer Melon*. Is a pretty good fruit, and a good bearer. May be cultivated for an early crop.
6. *Black Galloway*. This was brought from Portugal by Lord Galloway. The best for an early crop, and the fruit ripens sooner than any other—Has greatly degenerated by being suffered to grow near other sorts.
7. *Egyptian*.

Culture, &c.

I. SEED:

- a. Should be procured from good Melons produced in some distant garden, for if sown on the place or near where it was raised and ripened, it is very apt to degenerate.

This degeneracy is supposed rather to proceed from growing near an inferior sort; or too near Cucumbers, Gourds, &c. "No doubt remains of their degenerating from this cause."

- b. Seed should be at least 3 years old, and is the better for being 6 or 7 but not more—Light seed produces weak plants.

The management of Melons being nearly the same as that of Cucumbers, the reader is desired to turn to that article; the few particulars wherein they differ are here mentioned.

2. First Crop, or those grown in frames.

- a. The seed for this crop may be sown from January to the end of March—One plant in each light,

- b. When they have gotten 4 leaves, the tops should be pinched off with the finger and thumb; and again when they have 2 or more lateral shoots, the tops of them should be pinched off when they have 2 or more joints, to force out more.

- c. To procure fine fruit, pinch off all the other fruit except the one with the longest stalk, and pinch off the end of the runner at the third joint above the fruit; and new runners also that appear below the fruit should be checked.

- d. When the fruit is about the size of a tennis ball, a piece of tile should be put under each, and as they approach to ripening should be turned several times, that they may ripen equally.

The practice of taking off the leaves about the fruit is wrong, the fruit being always the worse for it, and the skin harder and tougher.

e. Melons require a greater share of air, and less water than Cucumbers.

f. The frames should be very wide, and when the season will allow of it, raised about 3 inches for the vines to run under them.

3. Second Crop, or those raised under bell or hand glasses, or frames covered with oiled papers.

a. The seed for this crop is sown the end of March, or first week in April.

b. Two plants to be planted on each hill, (which should be 18 inches high) and when they have taken root the weakest to be removed.

c. When grown beyond the glasses, should be sheltered with mats at night; and the ridges widened when the plants reach the edge, with old dung covered with earth to a level with the bed.

d. Covering the plants with *mats* when the leaves droop, refreshes them more than watering.

e. *When the fruit appears* the plants should be but *slightly watered*, but the earth about the beds well moistened.

f. The glasses should be continued over the roots of the plants; and glasses also placed over the fruit in unfavourable weather.

4. Third Crop.

a. Seed has been sown on a hot-bed the 3d of May, the plants not transplanted, and covered with oil paper; the fruit of which continued from the end of August to the end of October.

5. USE.

a. The fruit ripe; and such of the latest fruit as are not likely to ripen, are pickled and called Mangoes.

b. *Orgeat* is composed, for the most part, of Melon-seeds mixed with sugar and some perfumed water.

MICE.—See vermin.

MILLET. (*Milium*.)

1. With black seeds.
2. With white seeds.

Culture, &c.

1. SOIL.

- a.* A warm dry soil, or light sand.
- b.* Is reckoned a great impoverisher of the earth.

2. SEED.

- a.* To be sown early in April, but not very thick; as the plants branch much.
- b.* Must be well dried, or it will not keep.

3. PLANT.

- a.* Requires, when first up, to be kept clear of weeds, after which they will get the better of them.
- b.* When it begins to ripen must be protected from birds, or they will soon devour it.

4. USE.

- a.* Though it generally ripens its seed very well in England, it has been seldom cultivated, but by way of curiosity; and in small gardens, for feeding poultry and Canary birds.

It is imported, and frequently used in families for making puddings, &c. and it forms a principal part of the food of the natives of warmer climates.

- b.* Is mowed for hay.

MINT. (*Mentha Viridis*.)

Var. With curled leaves.

Culture, &c.

1. INCREASED.

- a.* Is easily propagated by parting the roots in the spring, and planting off-sets or cuttings in the summer months in a moist soil.

2. PLANT.

- a.* Should be planted 8 inches apart on beds about 4 feet wide, allowing a path 2 feet broad.—New beds should be made every three years.
- b.* For winter and spring use should be taken up before Christmas, and planted upon a moderate hot-bed close together.

- c. For medicinal use should be cut in a very dry season, just when in flower, and hung up to dry in a shady place.

3. USE.

- a. For culinary purposes, sallets, &c. and medicinal purposes.

This plant is called by some Spear-Mint, Hart-Mint, or Roman-Mint.

MOLE OR ANT-HILLS.

1. Mole or Ant-hills are removed by chopping round them with a heavy adze or grubbing hoe, the cutting edge of which is circular, and $10\frac{1}{2}$ inches wide; the depth of the blade, including its neck to the eye, (or where the handle is fastened) is $8\frac{1}{2}$ inches; from half a dozen to half a score strokes will belt the largest hill, and loosen it from its seat, which is always left lower than the adjoining surface, to receive and hold the rain water, which destroys the ants.
2. With a plough. See the plate, fig. 10. (1) The beam 9 feet long and 4 inches square. (2.) The two flat shares of iron 4 feet long and 5 inches wide. (3.) The side pieces 5 feet long and 5 inches broad, by 4 thick. (4.) The handles 4 feet 6 inches long. (5.) The four standards 2 feet high from the ground, same size as beam.
3. The insects by irrigation.

The hills are commonly first made by Moles, and afterwards possessed by innumerable companies of Ants, who, by long possession, increase them to a prodigious size. (See vermin.)

MORELL. (*Phallus Esulentus*.)

This has been successfully cultivated in the manner of Mushrooms. As they are observed to be in the greatest plenty where fires have been made, the spreading of wood ashes, would probably contribute to their increase.

MOSSES.

1. DESTROYED.

- a. By harrowing the ground with a loaded harrow.

- b. Seot found effectual against moss, applied in November, 40 bushels per acre.
- c. By manuring with marle or lime; or strewing sand or turf ashes.
- d. By irrigation or watering the land.

The land most subject to moss is commonly a strong loam, or some other binding soil, where the crop has been long carried off the field, without any amendment being given by the addition of any kind of manure.

- e. On trees, by draining the land; or by digging round the tree in winter, and bringing fresh mould from the bottom of ponds, roads, or old walls, previously prepared by pulverization, and placing it round the roots of the tree, before the earth be thrown back.

2. USE.

- a. A decoction of the Fir Club-moss (*Lycopodium Selago*) is used to kill lice upon cows and swine.
- b. When the Grey Thread-moss (*Bryum Rurale*) takes to grow upon thatched buildings, so as to cover the thatch, instead of lasting but about 10 years, it will endure for an age.
- c. In some parts of Scotland the Club-moss is used instead of allum, to fix the colours in dying.

Of this moss also mats are made.

- d. Cypress-moss, (*Hypnum Cupressiforme*) dyes yellow.
- e. It is generally believed that the roots and decayed stalks of the Bog-moss (*Sphagnum Palustre*), constitute the principal part of that useful bituminous substance, called Peat.

The kind of Peat, called *Moss*, which after long rains has spread and destroyed many hundreds of acres, (as at Solway, where it lies to the depth of 15 feet) it has been found, is only to be removed by floating it off by the assistance of a stream of water, introduced from the higher grounds.

MULBERRY.

- 1. Black Mulberry. (*Morus Nigra*.)
- 2. White Mulberry (*M. Alba*) These two are very hardy.

3. With the leaves so unequally sawed, that they appear to have been eaten by insects (*M. Indica*.) There is a tree of this kind in Kew Gardens.
4. Paper Mulberry (*M. Papyrifera*) Thrives well in our climate, except in very severe winters, which do not appear wholly to kill it—The Chinese make paper of the bark; one kind of their paper, probably made from it, is soft, of a pale yellow colour, and readily tears.
5. A shrub mulberry has lately been introduced into England.

Culture, &c. of the Black Mulberry.

I. INCREASED.

- a. By seed.
- b. By laying down the branches, which take root in one year, and are then separated from the old tree.
- c. By cuttings; these should be shoots of the former year, with one joint of the two years old wood at bottom; the best season for planting them is March.

2. TREE.

- a. Grows to a large size.
- b. When designed to feed silk worms, should never be suffered to grow tall, but kept in a sort of hedge.
- c. The leaves should not be pulled off singly, but sheared off together with their young branches; which is sooner done, and not so injurious to the tree.

Culture, &c. of the White Mulberry.

I. INCREASED.

- a. May be propagated like the black; but the quickest way is from seed sown on a moderate hot-bed—The young plants to be guarded from the frost the first winter.
- b. In Spain the seeds are obtained by rubbing a rope of *esparto* over heaps of ripe mulberries, which is then buried two inches under ground.

As the young plants come up, they are drawn and transplanted; and afterwards set out in rows in the fields; where they are generally pruned every second year, though some never prune them.

2. USE of both the black and the white Mulberry.

- a. The fruit—The fruit mixed with apples makes a very agreeable liquor.

b. The leaves for feeding Silk-worms.

In Italy, in order to provide food for the silk worms in case of a blight among the mulberry-trees, other leaves have been tried; and bramble tops have been found the best succedaneum.

c. For hedges.

MUMMY.

Mummy, among gardeners, is a kind of wax used (in lieu of clay) in grafting, and planting the roots of trees; and is made of 1 lb. of common black pitch, and a quarter of a lb. of common turpentine, put into an earthen pot, and set on the fire in the open air; in doing this, you ought to hold a cover in your hand, in order to quench it, by putting it on; which is to be done several times, setting it on the fire again, that the nitrous and volatile parts may be evaporated; The way to know when it is done enough, is by pouring a little of it upon a pewter plate, and if it be so it will coagulate presently; when the melted pitch is to be poured into another pot, and a little common wax added to it, mixing them well together; and then to be kept for use.

MUSHROOMS. (*Agaricus Campestris.*)

Culture, &c.

1. SOIL.

a. Grows naturally in dry pastures after rain.

2. INCREASED by Gardeners.

a. From Seed; these are lodged between the gills, but being too minute to collect, a piece of the gill is planted.

b. From Spawn, *i. e.* the white fibrous radicles found about their roots, or among horse-litter; in form of long white strings, these produce tubercles in the manner of potatoes.

The seed or spawn is sown on a hot-bed, in September; for the making of which see the article HOT-BEDS.

3. USE.

a. Are eaten either fresh, stewed, or boiled, and preserved, pickled, or pulverized.

Of its juice, with wine, salt, and spices, is made the sauce called *Catchup*.

Besides the above there are several other kinds of Mushrooms eaten, which, there is reason for believing, might with equal ease be cultivated; viz.

1. Yellow Mushroom or Chanterelle (A. *Chantarellus*). Grows in woods: has a pleasant smell, something like a ripe plumb, and when properly stewed, a savoury taste and fine flavour; otherwise tough and subacid.
2. Equal-gilled Mushroom (A. *Integer*.) Grows in woods; the substance breaks short, and is a little acrid, but is frequently eaten in *Germany* and *Russia*.
3. Milky Mushroom (A. *Lactifluus*.) In woods frequent. This is reputed to be one of the best kinds for the table, though not eaten in *England*.
4. Violet Mushroom (A. *Violaceus*.) Grows in woods. It is a firm substance, and is eaten by the *Russians* and *Germans*.
5. Little Champignon or Fairy Mushroom. (A. *Coriaceus*.) In dry pastures, and frequently in those green circles of grass called *Fairy Rings*. The French call it *Moufferon*, and esteem it one of the best for the table.
6. Esculent Mushroom (A. *Esulentus*. Ray.) This grows with the common, to which it is little inferior in taste. The top and gills white.
7. Green Mushroom (A. *Viridis*. Ray.) In Hornsey-wood. This is of a whitish green colour. Flesh of a fine flavour.

Should any person be inclined to cultivate either of the above, he is referred to Lightfoot's *Flora Scotica*; or Whithering's *Botanical Arrangement of Vegetables* naturally growing in Great Britain, for a description of them; with which they should be carefully compared, as there are several kinds of Mushrooms which are poisonous—To persons suffering from eating such, the most approved and speedy remedy, is to use emetics and cathartics: To prevent, however, any accidents of this kind, perhaps the best advice would be to caution persons in general, to meddle with no other sort than the common field Mushroom, which is generally cultivated;

and rather to procure such of those who cultivate them, than of those who may occasionally offer them to sale.

"The false mushroom is a terrible poison greatly to be dreaded; therefore beware."

MUSTARD.

1. White Mustard. (*Sinapis Alba.*)
2. Common Mustard. (*S. Nigra.*) Of this the sauce called Mustard is made.
3. Wild Mustard or Charlock. (*S. Arvensis.*) The seed sold under the name of Durham Mustard-seed—varies,
 1. With cut leaves.—2. With entire leaves.

Culture, &c. of the common Mustard, &c.

1. SOIL.

- a.* Requires rather a heavy soil, which must by tillage be brought into a nice mould.

2. SEED,

- a.* White or reddish.
- b.* Sown broad-cast in March at one bushel per acre; by some a peck and a half; the same of brown.
- c.* Sown in drills a foot asunder.
- d.* The white sown in the manner of garden cress; which see.

3. PLANT

- a.* Hoed always twice, and frequently three times; the plants set about 10 inches apart.
- b.* Reaped in August.
- c.* *Medium* produce three quarters per acre.
- d.* Mustard never fallows mustard, but may be sown on the same land again in the third year. Leaves the land in sufficient tilth for any other crop.

4. USE.

- a.* The well known substance called Mustard, is made of the seed.
- b.* Of the refuse or husks of mustard seed, which cannot be reduced to powder, a coarse oil is extracted by means of a moist heat.

An *oil* possessed of the acrimony proper to the mustard, and useful both in sallads and in medicine, is expressed from the seed powdered and put into bags, by

the mere mechanical force of the wedge in a mill, without any heat.

- c. The seed-leaves. of the white for small salleting.

MYRTLE.

1. Common Myrtle. (*Myrtus Communis.*)
2. Dutch Myrtle. (*Myrica Gale.*)
3. Candleberry Myrtle. (*Myrica Cerifera.*)

Culture, &c. of Common Myrtle.

1. SHRUB.

- a. In Cornwall and Devonshire grows every where in the open air, without the aid of green-houses, particularly on the southern coast; in other parts of this island requires the protection of a green-house.

2. USE.

- a. Armstrong, in his history of the island of Minorca, considering myrtles as natives of Cornwall recommends the cultivation of them, with a view to prevent oaks being cut down at an improper season, for the sake of more easily stripping off the bark; the tops of myrtle being used for tanning in Minorca.
- b. The young tops are used in dying.
- c. The berries are eaten by the natives of Minorca.

Culture, &c. of Dutch Myrtle or Gale.

1. SOIL.

- a. Grows spontaneously in this country on marshy barren ground.

2. SHRUB.

- a. Grows erect, and is about 2 or 3 feet high; the leaves have a sweet, agreeable, myrtle-like odour.

3. USE.

- a. Is used instead of hops; but unless it is boiled a long time it is apt to occasion head-ach.
- b. The cones boiled in water will yield a scum like bees wax, capable of being made into candles.
- c. This plant would be useful in cotton spinning manufactures, which, in hot weather, are exposed to the biting assault of a species of vermin (*Pulex*), which breeds in the dust, and other refuse, necessarily produced in the operation of spinning; the smell of it being

so obnoxious to these vermin and moths, that they precipitately fly its approach. Hog-sties littered with it, frees swine from lice.

d. Gathered in the autumn it dyes wool yellow.

e. It is used to tan calf-skins.

f. Linnæus, from the smell of the plant, is induced to suspect, that *Campbor* might possibly be prepared from it.

Culture, &c. of Candleberry Myrtle.

1. INCREASED.

a. By seed sown in the spring; the young plants must be screened from the frost the first winter.

2. TREE.

a. Bears very well our climate.

3. USE.

a. In America the berries are boiled in water, when the water is cold, they skim off the wax that proceeds from the berries, and make candles of it.

NECTARINE. (*Amygdalus Persica*.)

1. Fruit ripening in August. 1. Fairchild's early. 2. Elrouge. 3. Violet.

2. Ripening in September. 1. Newington. 2. Temple. 3. Red Roman. 4. Murry. 5. Brugnion, or Italian. 6. Scarlet. 7. Tawny. 8. Golden.

3. Ripening in October. 1. Virnash, or Peterborough.

4. The following are the most esteemed for forcing, arranged in the order in which they ripen, viz. 1. Elrouge. 2. Newington. 3. Roman.

The Nectarine is considered by botanists as only a variety of the Peach, both having, it is affirmed, been seen growing naturally on the same tree.

Culture, &c.

1. SOIL.

a. Will succeed in any good garden soil.

b. If the natural soil is bad, pave the surface with flag stones, slates, or tiles, and raise a border of good earth of a proper height for the roots to strike in.

2. INCREASED.

- a. By budding principally on plums, as being the hardiest and most successful stocks for the general supply; and occasionally on Almond, Peach, Apricot, or its own seedling stock; the stones for which should be planted in autumn.

3. TREE.

- a. Is a hardy tree in respect to growth, rises to 15 feet or more high; and begins to bear when 3 years old.
 b. To be transplanted from the nursery into the border in October; the distance never to be less than 12 feet, and in very good ground 14; some allow from 15 to 20.

The middle of November is the proper time to bring them into the forcing-house.

- c. Bears fruit on the young wood, shoots of a year old only, and immediately from the eyes of the said shoots.

d. Pruning.

(1) In summer train the best placed young wood of the summer at full length, cutting out all foreright and luxuriant wood.

(2) In winter select the best placed last summer's shoots, in every part, quite from the bottom upward; cut out the irregular and superabundant ones, together with part of the old bearers, down to the young wood; and shorten the supply of new shoots from 6 to 8, to 15 or 18 inches, according to their strength; and nail them at 5 or 6 inches distance.

(3) In the forcing house, the proper time to shorten the shoots is when the blossom appears.

- e. When forced trees produce such abundance of fruit as to have 6 or 7 in a cluster, cut the weakest, when set, through the middle with a pair of narrow-pointed scissors; they will then decay, and by this method the foot-stalks of those that are left will not be wounded. Cut off also such leaves (allowing a little of their foot stalks to remain) as entirely exclude the fruit from the sun.

4. USE

- a. The fruit.

NASTURTIUM. (*Tropæolum Majus.*)*Culture, &c.*

1. PLANT.

- a.* The culture of this plant is simply sowing the seed in April, where the plants are to remain; which should be near something for them to climb up.
- b.* This plant, which in England is an annual, in a warmer climate is perennial, and shrubby; as is the case also with beet, marjorum, &c.
- Often cultivated as a flower.

2. USE.

- a.* The Flowers are frequently eaten in fallads, and are esteemed very wholesome; the berries are pickled, and by some are preferred to most kinds of pickles for sauce.

NETTLE-TREE. (*Celtis Occidentalis.*)*Culture, &c.*

1. SOIL.

- a.* Delights in a moist rich soil.

2. INCREASED.

- a.* By seed, best sown as soon as ripe.

3. TREE.

- a.* For the first two winters after they come up from seed, they require a little protection—Two years old the best time to plant them where they are to remain, as they have spreading roots which would be much injured by late planting—Require to be watered at the time of planting, and in dry weather till they have taken root.
- b.* This is a native of America, where it grows to a large tree.

4. USE.

- a.* The wood being tough and pliable, makes the best of shafts, and coach-makers also esteem it for the frames of their carriages.

This tree is also named Lote:

EARTH NUT. (Arachis Hypogaea.)*

This is a native of Africa; from whence it has been carried by the negroes, to the West Indies, Carolina, &c.

Culture, &c. in England.

1. SEED.

- a. The seed or kernels should be sown in the spring in a hot-bed, and when the weather gets warm, the plants exposed gradually to the open air.
- b. In summer, the seed will readily grow in the open ground.

2. PLANT.

- a. Trails along the ground, and when the germen is formed, it thrusts itself into the earth (which should be very light), and there the pod is formed and ripened.

2. USE.

- a. The kernels, which are eaten roasted like chesnuts; are called *Pindalls* by many. Yield very pure fallad oil.

OAK. (*Quercus Rober.*)

1. With only one or two acorns together, and these supported on long footstalks.
2. With six or seven acorns in a cluster, supported on very short footstalks, the leaves less divided than the former, and of a more laurel-like texture; the tree itself is more humble, and the timber harder and higher-coloured. The first is by some called the female oak, and the latter the male oak.

Obs. The var. 2, grows principally in the wilds of Kent and Essex, and is rarely met with in other parts of the kingdom. Though some make it of more humble growth than var. 1, others describe it as the larger tree, having a better appearance, and consequently more suited for parks and plantations.

* " Called by Angola Negroes,—*Cela* or *Angola Pinder*."

Culture, &c.

1. SOIL.

- a.* Grows well in rich black earth; in strong moist loams; in sandy loams or sands, with a stratum of clay beneath; and black moorish-land, where long heath grows.
- b.* Grows spontaneously on sour land.

2. SEED.

- a.* The surveyors of Dean Forest proposed to turn fods upside down, at 3 feet apart, to plant one or two acorns in each fod with a dibber, thinning the trees at 10, 15, 25, 35, and 45 years growth, leaving at last only 75 trees upon an acre.
- b.* Sown on land first brought into good tilt; from four to six bushels per acre.
- c.* In Staffordshire plantations are sometimes made by sowing acorns with wheat, after a summer fallow.
- d.* It has been recommended to plant the acorns under bushes, which would protect the young trees till they rise above the bite of cattle.
- e.* When a wood is cut, the replanting is effected by striking in, with a pick-axe, a sufficient number of acorns, and other seeds of forest trees.

3. TREE.

- a.* When very young may be transplanted twice, or thrice, if each time the tap or principal root is cut off.

Oaks raised from the acorn without removing, on account of the tap-root striking down into the ground, where there is less nourishment, grow slowly, but are, when they arrive at timber, the best; being generally fuller at heart, and more compact, strong, and lasting.

- b.* Oak plants of one or two years growth, after they have taken the ground, are often cut off a little above the ground, if they are stunted or crooked; and the second shoot is trusted to for the tree; as it is found to grow with greater luxuriance than the first.
- c.* It is supposed that oak, in a good soil and situation, may, at 75 years from the acorn, have acquired 40 feet length of shaft, being 14 inches girth at the base,

12 in the middle, and 10 inches at the top—or one ton of timber; and that in 75 years more it would produce above seven times as much in quantity.

- d. The largest oak now growing in England, (the famous Fairlop Oak, in Hainault Forest), measures, at 3 feet from the ground, about 36 feet in girth; and the boughs extend about 300 feet in circumference.

In Whinfield forest, near Appleby, Westmorland, is an old hollow trunk of an oak, called the three brethren tree, whose circumference is 42 feet, and will admit a man and horse to ride within the same.

- e. In America they cut a ring of bark from the trunks of Oaks, &c. a little above the ground; this checks their growth, and renders the wood more firm and valuable after they are cut down; this is generally done a year or two before they begin to fell the wood.

4. USE.

- a. The wood being hard, tough, tolerably flexible, and not easily splintering, makes it to be preferred to all other timber for building ships of war; it is also adapted to almost every purpose of the carpenter; it also serves for staves, laths, and spokes for wheels.
- b. The bark is universally used for tanning leather; and afterwards for hot-beds, fuel, and manure. If for the last purpose lime be mixed with it, in two or three months it will be reduced to a fine black earth; but, if it were only laid in heaps, as many years would be required to effect its spontaneous fermentation, or putrefaction.

Bark older than 40 or 50 years, begins to be corky, and bad for tanning leather.

- c. The saw-dust and even the leaves, have been found capable of tanning, though much inferior to the bark for that purpose.—A patent has lately been taken out for tanning with a liquor made from oak saw-dust, instead of that from oak bark.

From experiments made, it appears, that half a peck of leaves contain nearly as much astringent matter as a pound of bark. The leaves make excellent hot-beds for melons.

- d.* An infusion of the bark, with a small quantity of copperas, is used by the common people to dye wool-
len of a purplish blue. The bark also has been sub-
stituted for gall nuts (and even said to be better) for
dying of hats.
- e.* Oak saw-dust is used in dying fustian and drabs, the
different shades of brown.
- f.* Oak apples are used in dying as a substitute for galls,
but are not so durable. The expressed juice, mixed
with vitriol and gum-arabic, will make ink.
- g.* Horses, cows, sheep, and goats, eat the leaves;
swine and deer fatten on the acorns.—The acorns have
been roasted as a substitute for Coffee in the following
manner—Take sound and ripe acorns, dry them gra-
dually, and then roast them in a close vessel or roaster,
keeping them continually stirring, in doing of which,
especial care must be taken that they be not burnt
or roasted too much, both which would be hurtful.—
In the North of Europe bread has been made with
them.
- h.* On the bark of our English Oak, and also on that
of the Plumb, Cherry, and Vine; have been found a
kind of kermes, about the size of half a grey pea,
which strikes a carnation colour that stands with lye—
Rubbed upon white paper, it tinges it with a beauti-
ful purple, or murrey.

LUCOMBE OAK.

This is an evergreen, raised about the year 1765,
by Mr. Lucombe, nursery-man at St. Thomas's, Exe-
ter; from an acorn of the iron or wainscot oak.

Culture, &c.

1. SOIL.

- a.* Flourishes in all soils; and has been much planted
in Devonshire, Cornwall, and Somersetshire.

2. INCREASED.

- a.* By grafting.

3. TREE.

- a.* Its growth is strait and handsome as a fir.
- b.* Makes but one shoot in the year, viz. in May, and
continues growing without interruption; the shoots

in general are from 4 to 5 feet every year, so that it will, in the space of 30 or 40 years, out-grow in altitude and girth the common oak of a 100.

4. USE.

- a. The wood is thought by the best judges, in hardness and strength, to exceed all other oaks.

OATS.

1. Oat. (*Avena Sativa*.)

- a. White, mostly cultivated in the south. Greatly impoverishes the soil.
 b. Black, mostly cultivated in the north. Tillers more than the white.
 c. Brown or Red Oat—Ripens early and does not shed its seed; meal good.
 2. Naked Oat or Pilcorn (*Avena Nuda*.) This grows wild in some places, but is also cultivated, being nearly as good as the common Oat; making excellent meal: thrives on the poorest land—It is called Naked Oat, because it threshes clean out of the husk.
 3. Skegs (*Avena Stipiformis*.)
 4. Red Friesland, Dutch, or Holland Oat.
 5. Tartarian, or Siberian Oat.
 6. Poland Oat. Greatly impoverishes the soil.

Culture, &c. of the White, Black, and Brown Oat.

1. SOIL.

- a. The white requires dry good land.
 b. In some parts of Westmorland the land is sometimes ploughed in August or September, and undergoes no other operation previous to the sowing in spring—This mode of culture has been found to answer very well.

2. SEED.

- a. Sown from the middle of February till June.
 (1.) The black Oat, sown in the south, on dry ground in February, and on wet in March—Has been sown with success under furrow in January.
 (2.) The white Oat being tenderer, is sown in March or April.
 b. Quantity of seed per acre from four bushels to a quarter.

Oats are picked by hand, by curious persons, for seed; if the top one is a single oat, the rest on that stem will be so too—The double ones are rejected.

- c. Sown with 12 lb. of clover, and one bushel of ray grass.
- d. Sown broad-cast at twice over the field in the same place.
- e. Dibbled.
- f. Drilled.

3. PLANT.

- a. Grows better than any other kind of grain on cold mountains, and on marshy land. Is generally the first crop on breaking up waste land.

4. USE.

- a. The grain for horses—Before the increase of barley tillage, oats were malted.
- b. The meal is made in broad cakes, of which there are varieties prepared, some with four leaven, others without leaven, and rolled very thin; it is also boiled in water into porridge.
- c. The straw used for packing, and feeding cattle; the red inferior to the black or white, for the latter purpose.

There are three striking varieties of these Oats, as—

- (1) Peebles Oat (From Peebles-shire, in Scotland). This is a variety of the red oat; it is a very proper oat for hilly districts, not only for its earliness, but in not being easily shaken by the wind; the grains are smaller than any other oat; but from the very thin skin it meals better, and is well liked by the millers.
- (2) Angus Oat, (from Angus-shire, is a better bodied grain than the common oat; produces more straw, and answers very well in early situations; and also beyond every other in poor, dry, hungry, rabbit-warren soils, from its throwing up so much more straw than any other kind. Ripens later than the common oat.
- (3) Potatoe Oat. This is so called from having been accidentally found in a field of potatoes, in one of the northern counties of Scotland; it is the best kind for a loamy soil; and ripens earlier than the common oat; the produce from 10 to 20 fold, and even more—Is much cultivated in the South of Scotland.

Culture, &c. of Skegs.

1. SOIL.

- a.* Will grow on the poorest land; but are worth cultivating on good land.

2. SEED.

- a.* Two Winchester bushels sown per acre.

3. PLANT.

- a.* Yields a crop double that of other oats, in quantity; but not more than equal in weight.

4. USE.

- a.* The grain is reckoned remarkable sweet good food for horses.
b. Given in the straw, in the spring, to ewes before lambing, and also chopped for them. Are remarkable good food for horses and cows in the straw.

Culture, &c. of the Tartarian, or Reed Oat.

1. SOIL.

- a.* Seems well adapted to land exhausted under bad management.

2. SEED.

- a.* The grain inferior to the early or Dutch oat, not yielding an equal proportion of meal. Is late in ripening.
b. The grain has been lately improved on the farm of a curious cultivator, by picking the seed, and sowing only the shortest and plumpest kernels.

3. PLANT.

- a.* The straw is luxuriant, and the grain not so liable to be shaken out by the N. W. gales, as the other sorts.
b. One grain planted has produced, on four stems, 1356 grains.

This is supposed to be a distinct species, unnoticed by *Linnaeus*.

Culture, &c. of Friesland and Poland Oats.

The distinguishing qualities of the Friesland and Poland Oats are, that they ripen soon, easily shed, thrive only on a very rich soil, generally meal ill, but sometimes give a great increase; the quantity sown in general is seven or eight bushels of the Poland, and six of the Friesland; these quantities are necessary, as they

do not tiller much; the time of sowing, March or April—The early white Dutch and Poland Oats are always preferred by bog improvers, to the common Scotch or late oats; which are too apt to run to straw, and lodge before the grain arrives at maturity.

A variety of the Poland Oat, called Church's oat, is held in high estimation in Northumberland, as the best early oat yet known for sowing upon loamy lands, in good condition; they are very early, very productive, and much liked by the millers. This variety is known by the grains being remarkably short, large, plump, round, and well filled, and not in the least tailed: a bushel generally weighs 48 lb. This variety was first raised in Scotland.

" OKRA.

" A valuable garden plant, excellent in cookery, as a sauce; it makes a coffee preferable to the West India, and but little inferior to Mocha. Easily propagated by its seed."

OLIVE. (*Olea Europæa*.)

1. Province O. This is cultivated in the South of France, and is the best kind for pickling, and for making of oil—The fruit varies, as green, white, and of a small roundish shape.
2. Spanish O. Very large fruit, but makes a strong rank flavoured oil.
3. Italian O. A large hardy tree, which produces, in warm seasons, some fruit in England.
4. Cape of Good Hope O. (*O. Capensis*) With small box like leaves; a hardy sort.

Culture, &c.

1. SOIL.

- a. Grows largest in a moist soil, but produces most fruit in a poor.
- b. The fruit, on a chalky soil, gives the finest, and longest keeping oil.

2. INCREASED.

- a. By grafting.
- b. By layers.

- c. By cutting strong shoots or truncheons from the roots, being careful to preserve some of the fibres with it.

3. TREE.

- a. Is rarely seen with a single stem, but frequently two or three rises from the same root, to the height of 20 or 30 feet.
- b. In Devonshire the Olive has grown for many years in the open ground, and been seldom injured by the frost, but did not ripen their fruit; but when trained against warm walls, Miller mentions an instance of a tree at Camden-house, near Kensington, producing one year a good number of fruit, large enough for pickling; and Bradley another in a garden at Hoxton.
- c. In Italy, to forward the ripening of the fruit, they prune the trees into the form of a cup, by cutting out the centric upright branches, in the same manner as gardeners trim gooseberry bushes.

4. USE.

- a. The fruit fresh; pickled; and for making oil.

ONION. (*Allium Ceba.*)

1. Strasburg; the best for long keeping.
2. White and Red Spanish, or Portugal; require more room than the rest.
3. Silver-skinned or Egyptian.
4. Blood-red.
5. Onion that increases by cloves or off-sets.
6. Two years keeping or James Onion.
7. Onion tree, having bulbs at the end of the leaves, more curious than useful.

Culture, &c.

1. SOIL.

- a. A good rich soil.

2. SEED.

- a. Sown the end of February or early in March.

To be sown thinner for a winter crop than for such as are to be drawn during summer.

- b. 6 lbs. to an acre, but more if a crop is to be drawn out, which gardeners call *cullings*.
- c. Should be sown if possible in a dry time, and before the ground is raked. In light ground to be trod in.

d. Sown thick on a bed in August, to furnish, by thinning, young ones for sallots in spring; and the remaining ones to supply the house, after the winter Onions are over.

3. PLANT.

- a. In about six weeks after sowing, the plants will be high enough for hoeing to the distance of 2 or 3 inches; in a months farther time thin them 4 or 5 inches; in a month or six weeks, for the last time, to 6 inches square; must be kept clean of weeds—The thinning and weeding is to be done in dry weather.
- b. Are at their full growth, when their blades shrink and fall to the ground.
- c. To preserve—Spread them first on dry ground for a fortnight, turning them every day to prevent their taking root; and then lay them, but not very thick, in a garret or loft, and exclude the air as much as possible—If their roots are slightly singed with a hot iron, it will effectually prevent their shooting.
- d. For seed—The roots are to be planted early in March, in furrows made with a plough or spade, and filled with a hoe, in beds 3 feet wide, the roots to be 9 inches apart, in rows 1 foot asunder; the stems are to be supported by stakes 4 feet long, driven into the ground at 6 or 8 feet apart, and packthread or rope yarn fastened from one to the other a little below the heads.
- e. When ripe the heads are to be cut (or the seed will shed) and spread in the sun, on coarse cloths to dry; being, however, taken under shelter at night, and in rain; when the seed is beaten out, it is to be dried one day in the sun, and then put in bags to preserve for sowing.

4. USE.

- a. As a culinary root.

WELSH ONION. (Allium Fistulosum.)

Culture, &c.

I. SEED.

- a. Seed to be sown in August, in beds like the common Onion.

2. PLANT.

- a. This plant never bulbs.
- b. Is so hardy as to resist the hardest frosts—If the leaves should suffer, the root will sprout again in the spring.

3. USE.

- a. Is a very useful plant for culinary uses, before the spring Onions come in.
- Is called on the continent *Ciboule*.

" ORCHARD and FRUIT TREES.

" Plant, prune, and train, with consulting Bucknall and Forsyth; who are great on Fruit-Trees."

OXEN.

1. *Compared with horses.*a. *Superior to horses.*

- (1.) For ploughing.
- (2.) Being cheaper at first cost; and harnessed at less expense.
- (3.) Their keep much cheaper.
- (4.) If lamed the loss comparatively small, as they can be fattened for the butcher.
- (5.) Increases the flesh meat of the market.

b. *Inferior to horses.*

- (1.) For harrowing and all other purposes of the farmer, but ploughing.
- (2.) For strength—Some farmers work three horses to six oxen, others reckon their strength but as two to six.
- (3.) Though horses cost more at first, yet, if bought at four or five years old, they improve in value as much, if not more, than oxen.

2. The North Devon breed excel all others in point of draft, and quickness of pace.

3. *Oxen are worked.*a. *In yokes*, which is attended with the difficulty of pairing them of equal strength.b. *By the horns*—It is difficult to point out, wherein the advantage of this method consists.

- c. *Harnessed* like horses—In this way they walk much faster than in either of the two former, and apparently work with more ease.
4. Are frequently shod standing; but in many places are thrown for this purpose.

" PALMA CHRISTI.

" A valuable plant. Grows in gardens; and yields the very valuable family purge, fresh and good, called *Castor Oil*."

PARSLEY. (*Apium Petroselinum*.)

1. Field and Garden Parsley—viz. 1. With plain leaves. 2. With curled leaves; this is preferred for gardens, as being more easily distinguished from Hemlock, &c.

2. Hamburgh Parsley.

Culture, &c. of Field Parsley.

1. SEED.

- a. Sown among oats, and fed the following year with sheep.
- b. Two bushels per acre, sown the end of February in drills about a foot asunder.

2. USE.

- a. This plant was tried as a preservative of sheep from the rot; and there is the greatest reason to suppose the success considerable, as the sheep quite round the farm were universally rotten, but those that fed upon parsley escaped without attack—Has been given for this purpose only twice a week for two or three hours each time.
- b. Is efficacious in the recovery of greasy and surfeited horses.

Culture, &c. of Garden Parsley.

1. SEED.

- a. In drills from February till August.
- b. Broad-cast when the roots are designed for medicine.

2. PLANT.

- a. The broad-cast hoed out single like carrots—Will be fit for use in July or August.

b. The drilled should be cut down close in September to come up in a thick growth for winter, and at the same time moderately thinned.

3. USE.

a. As a culinary herb.

b. The roots for medicine.

Culture, &c. of the *Hamburgh Parsley*.

1. SOIL.

a. A deep light soil.

2. SEED.

a. Sown thin in drills 6 inches distance, from February to April; or

b. Broad-cast and raked in.

3. PLANT.

a. To be hoed and thinned to 6 inches distance.

b. The roots in perfection in October, kept for winter use in sand.

4. USE.

a. The roots which are palatable and wholesome, are eaten like Carrots.

PARSNIP.

1. Garden Parsnip. (*Pastinaca Sativa*.)

2. Wild Parsnip.

3. Cow Parsnip. (*Heracleum Sphondylium*.)

Culture, &c. of Field and Garden Parsnip.

1. SOIL.

a. A rich deep loam; next to this, sand; but wet, stiff, or hide bound land is destructive to them.

b. If the soil be proper it will require very little manure.

2. SEED.

a. Sown in February or March.

b. Sown in autumn immediately after the seed is ripe; by sowing at this season it prevents the young plants being choaked with weeds. The frost neither injures the seeds or plants.

3. PLANT.

a. If sown broad cast, the plants to be thinned to 10 inches or a foot asunder.

- b.* If drilled, the distance of the rows to be 18 inches, the plants thinned to the distance of 10 inches, horseshoed twice, and earthed at the second time, but not so as to cover the leaves the second time.
- c.* If the tops are cut off, but not so as to injure the crown, it will increase the size of the roots.
- d.* Left in the ground are not injured by the frost.
- e.* If housed, are to be dug when the leaves begin to decay, which should be cut off three or four days before they are laid up: they are to be put in sand in a dry place.

The leaves are dangerous to handle, especially in a morning while the dew remains upon them; raising blisters full of a scalding liquor, which has proved very troublesome for several days.

- f.* To be planted for seed in January.

4. USE.

- a.* Are equal, or superior to carrots for Pigs, as they make their flesh whiter; and they eat them with more satisfaction.
- b.* Clean washed and sliced among bran, Horses eat them greedily, and thrive therewith; nor do they heat them, or, like corn, fill them with disorders.
- c.* Fatten sheep and oxen, in a very short time.

According to a proposition of the Jersey Board of Agriculture, a beast quite lean, will be rendered quite fat by Parsnips, in three months.

- d.* An agreeable liquor is made of the roots boiled in water with hops; and afterwards fermented with yeast.
- e.* As a culinary root.

Wild Parsnip. The root and seed of this sort is sometimes used in medicine.

Cow parsnip is collected in some parts of Suffex for feeding swine. Its culture has been recommended, as not only swine, but cows, sheep, and rabbits, are partial to it. It is of an early and rapid growth, and the seeds are most easily collected. Cow Parsnip is also called Hog Weed, from Swine being so fond of it.

PARTRIDGE. (*Tetrao Perdix.*)

With a little encouragement, partridges have been made as tame as common poultry. *Willoughby* tells

us of a certain *Suffex* man that had, by his industry, made a covey of partridges so tame, that he drove them before him, upon a wager, out of that county to London, though they were absolutely free, and had their wings grown.

Will not breed in a state of confinement; but if the eggs are placed under a hen, she will hatch them, and rear the young as her own chickens—A kind of partridge supposed to be the Red Partridge (*Tetrao Rufus*); is kept tame in some of the islands of the *Mediterranean*.

PASTURE.

1. Some graziers mix a few sheep and one or two colts in each pasture, which both turn to account, and do little injury to the grazing cattle. In some cases, sheep are of real benefit, by eating down and destroying Ragwort (*Senecio Jacobæa*) which disgraces some of the best pastures where oxen are only grazed.

So various is the appetite of animals, that there is scarcely any plant which is not chosen by some, and left untouched by others. The following œconomical experiment is well known to the Dutch, that when eight cows have been in a pasture, and can no longer get nourishment, two horses will do very well there for some days, and when nothing is left for the horses, four sheep will live upon it; this not only proceeds from their differing in their choice of plants, but from the formation of their mouths, which are not equally adapted to lay hold of the grafs.

2. New grafs, stocked very hard with sheep, curbs the partial luxuriancy of the seeds, and makes the grafs unite and mat at the bottom, forming a tender and inviting herbage.
3. *Alternately mowing and feeding* land greatly improves it.
4. In Cardiganshire and Yorkshire, it is customary to put up their fields as early in May as they can, for the summer season, with no other attention than eradicating dock, or cutting down thistles, &c. In that state they continue till November or December, when

all the stock is turned in, and every animal is in excellent condition, without the aid of hay, straw, or oats, and the butter is as good as in any part of the year. The frost sweetens the grafs, and snow does not injure; but while it is buried, dry food must be resorted to. In the spring of the year, young shoots of grafs are very forward under the shelter of the old, and both together are eaten with avidity. The land which was before mossy, from being overstocked and grazed too bare, is soon filled with palatable and abundant food, and the moss disappears without the aid of the plough, or surface manure.

5. In turning out horses to grafs in the spring, it is usual to choose the forenoon of a fine day to do it in; the natural consequence is, the horse fills his belly during the sunshine, and lays down to rest in the cold of the night; thereby, probably, exposing himself to disorders. In some parts of Yorkshire a better practice prevails; the horse is turned out at bed-time; the consequence is, he eats all night, and sleeps in the sunshine of the next day.
6. In Gloucestershire the best cheese is made from the coldest and least productive soils; over-run with rushes, &c. intermixed however with better herbage. And in North Wiltshire (famous for cheese) some dairymen mix sheep with the cows, to impoverish the pasture; in the proportion of about one sheep to a cow.
7. The bottom of an old hay-stack is esteemed an excellent manure for pasture-land, as besides the nourishment it affords, it contains a quantity of grafs seeds, which furnishes a new set of plants; It should never be suffered to mix with manure for corn-lands, as it will then raise grafs and other plants, which, though of use in the pasture, are weeds among the corn.

PEACH. (*Amygdalus Persica.*)

1. Fruit ripening in July; Early nutmeg P. Fruit very small.
2. Ripening in August; Early Anne (small). Small Mignon. Early purple. White Magdalen. Red

ditto. Great Mignon. Early Newington. Chancellor. Montauban. Belle Chevreuse. Yellow Alberge.

3. *Ripening in September*; Old Newington. Late purple. Belle Garde. La Teton de Venus. Rambouillet. Bourdine. Nivette. Rossana. Sion. Admirable. Royal. Violet. Royal George. Nobleffe.

4. *Ripening in October*; Perisque. Catherine (very large and beautiful). Bloody. Cambray. Narbonne. Monstrous Pavie of Pomponne (exceeding large). Heath.

5. The following are the most esteemed for forcing, arranged in the order in which they ripen in May or June, viz.

Early purple. Montauban. Royal George. French Mignon. Red Magdalene. Nobleffe. Rambouillet. Nivette.

Culture, &c.

1. SOIL.

a. Any good garden earth; but if of a rich loamy temperature it may prove an additional advantage.

b. If the natural ground is gravelly, add one half of strong loam, and two inches of rotten dung; if sandy, which is the worst of all soils for peaches, add three inches of strong loam to one of the natural earth, and one inch of rotten dung; if a fine light rich earth, add one third of a good strong loam—The border should always be trenched over three times, after the proper mixtures are laid on before planting.

c. The soil might be changed as for Nectarines.

Dung is a great enemy to this tree, making it throughout rambling wood, and causing it to gum.

2. INCREASED.

a. By budding either on plum, peach, almond, or apricot stocks.

3. TREE.

a. Grows 15 feet high.

b. Trained mostly as a wall fruit; though sometimes on espaliers, and as half standards, these however seldom bear well, or bring their fruit to perfection.

- c. Planted at 15 or 20 feet distance.
- d. Bears fruit along the sides of the young wood of the former summer, and immediately from the eyes of the shoot; the same wood rarely bears much fruit but once.
- e. Pruning.

(1) Summer—prune away all the foreright, and preserve the regular placed shoots and branches their full length.

(2) Winter—shorten the summer shoots, to encourage succession bearers from the lower eyes.

- f. As the fruit requires much room, they should be thinned at three different times, beginning when the size of a pea, by cutting them off with a sharp knife, leaving a piece of skin on the tree, which will soon drop off.

4. USE.

- a. The fruit.

PEACOCK. (*Pavo Cristatus.*)

Var. 1. Pied, 2. White.

A singular circumstance now and then occurs, in the *females* having the external marks of the plumage of the *male*.—In one instance, after having bred for some years, and then ceasing to lay eggs, she began to put out the male *eyed feathers*; and at the time of her death appeared like a young male.

The hen lays five or six greyish white eggs, the size of those of a Turkey: these, if let alone, she lays in some secret place, at a distance from the usual resort, to prevent their being broken by the male, which he is apt to do, if he finds them; the time of sitting is from twenty-seven to thirty days: The young may be fed with curd, chopped leeks, barley-meal, &c. moistened; and are fond of grasshoppers, and other insects; in five or six months will feed as the old ones, on wheat, barley, &c. The young are reckoned good eating, and the old ones in a wild state.

PEAR. (*Pyrus Communis.*)

- 1. The most approved Pear for making Perry, is the Squash (it bursts when it falls). Oldfield. Borland. Red Pear. Sack. Chincay. Laughland.

2. *Summer eating Pears*, which will not keep long.
- a. Ripening in July. Little yellow musk P. Green Chiffel. Catherine. Red Muscadella.
- b. Ripening in August. Jargenella (large and fine). Windfor (large and beautiful). Early Ruffelet. Great Blanquette. Little ditto. Musk Robine. August Muscat. Orange Musk. Perfumed. Red Orange.
- c. Ripening in September. Summer Bon Chretien. Summer Bergamot. Orange ditto. Rose Water. Salviati. Crawford. Green Musk. Long-stalked Blanquette. Pear Piper. St. James. Lemon. Red Admirable (large).
3. *Autumn Pears* of a handsome size, and that attain perfection for eating from the end of September till November: Autumn Bergamot. Swiss ditto. Great Ruffelet. Brown Beurre. White ditto. Red ditto. Monsieur John. Swans' Egg. Cresane. Muscat Fleury. Rouffeline. Marquis's Autumn Verte Longue. Beurre Bergamot. French Bergamot. Pound P. Green Sugar.
4. *Winter Pears*, both for eating, baking, and other culinary purposes, beginning to ripen from December till May, nearly in the order in which they are here mentioned.—Winter Bergamot. Martin Sec. Winter Beurre. St. Germain. Colmar. Vergouleuse. Spanish Bon Chretien. Chaumontelle. Winter Verte Longue. Dauphine. Martin Sive. Winter Thorn. Good Lewis. Ambrette. St. Austin. Holland Bergamot. Winter Ruffet. St. Martial. German Muscat. Easter Bergamot. Winter bon Chretien. Easter St. Germain.
5. Good *baking Pears*: Union, or Uvedale's St. Germain. Black Pear of Worcester. Cadillac. Double Fleur.
6. *Plot*, in his History of Oxfordshire, mentions a kind of pear as common in Worcestershire, and one of them growing in Oxford, the fruit of which (except in very wet years) in hardiness were little inferior to the younger shoots of the tree that bore them; he kept some of them ten years without their rotting—They were called Wooden-pears, and Long-lasters.

7. Double-bearing—*Plot* also notices two trees of this singular kind, called Paradise and Hundred-pound Pears, they blossomed twice in the year, and bore the first crop about Midsummer, the second near Michaelmas; the second crop was somewhat less than the first, and grew in a particular manner, coming forth at the end of the twigs, which was all the pedicles they seemed to have; and therefore they did not hang downwards, like those of the first crop, but pointed up in the air, or any other way the shoots directed them.

Culture, &c.

1. SOIL.

- a.* Will thrive on most soils; even on a stiff clay.
- b.* For wall or espalier trees a strong loam is esteemed the best soil; sand and gravel are reckoned to produce moss, canker, and a stony fruit without flavour.

2. INCREASED.

- a.* By the same method as the apple-tree; and is also occasionally grafted on the Quince, to form dwarf growers.

3. TREE.

- a.* In many instances they have produced plentiful crops when 100 years old.
- b.* Instances have occurred of a single pear tree affording three hogsheads of 100 gallons of perry; whereas, an apple tree that yields a hogshead of cider, is deemed a good bearer.
- c.* In orchards to be planted at 30 or 40 feet distance; and for walls or espalier trees not less than 20.
- d.* The horizontal branches of wall or espalier trees to be trained from 6 to 9 inches distance, according to the size of the fruit—The spurs thinned to two inches, and every year some of the longest cut clean off.
- e.* Formed with tall stems, and fanned heads, against buildings, or between the common dwarf wall trees.

4. FRUIT.

- a.* Pears are ripe about the beginning of September; and are shook off with long poles, having hooks at the end with which to lay hold of the boughs.
- b.* If some kind of Pears are gathered a week before they would ripen on the tree, and are laid on a heap

and covered, their juices will become sweet many days sooner than if they had continued on the tree.

c. Winter pears principally require a sunny exposure; and a fire wall improves all kinds beyond conception.

d. Wasps destroy the fruit.

5. USE.

a. As a fruit.

b. For making Perry—This liquor, when in perfection, has been thought very little inferior to the best wines imported from France; and has even been sold for Champaign.

The process of making perry is the same as cider.

c. Besides perry two other liquors are made with pears—1. By a mixture of pears and apples—2. By a mixture of the common wild crab, and the richer sweeter kind of early pears.

d. The wood, which is light, smooth, compact, and pleasingly veined, is used by turners, and to make joiner's tools; and for picture frames to be stained black; it is also frequently stained and substituted for Ebony.

e. The bark dyes yellow.

PEAS. (*Pisum Sativum*.)

FIELD PEAS.

1. Grey Hog Pea—The flowers of grey peas have the upper petal of a red or purplish white, and the side ones either a deep red or purple: the flowers of yellow seeded peas are white.

2. White Boiling Pea.

3. Blue Pea.

4. Rounceval Pea.

5. *Charlton* (or forty day species) sown in March, will be off in July; and turnep seed may be sown immediately after it, with one slight ploughing.

Culture, &c.

1. SOIL.

a. The blue pea will succeed on poor land—the rounceval requires a rich soil.

b. Light warm land.

A calcareous manure the best.

c. Supposed a proper crop for fresh land.

2. SEED.

a. From three to five bushels sown broad-cast.

b. If drilled at 22 inches, 16 gallons of seed to an acre
—Drilled at 16 or 18 inches.

c. White, blue, or Hotspur peas, sown in April or May, in drills 6 feet asunder, in the intervals Dutch turneps sown broad cast, or drilled in, and afterwards hoed—
The land to be cleared in time for wheat.

d. The various sorts are sown from October to the middle of May.

3. PLANT.

a. The drilled peas earthed and weeded twice; first, when about an inch above ground; and secondly, when 4 inches high.

b. Some farmers sow several stronger, and upright growing plants among peas, to support them and make them kid better; sometimes oats, but most commonly beans; the latter succeed best with grey peas.

4. USE.

a. Peas are used for boiling, and for fattening hogs; and were formerly given to horses in their provender.

b. *Pea haulm* or straw, saved in a favourable season, makes *excellent food* for horses, cattle, and sheep.

A large load of dry pea-straw, will burn from 400 to 450 weight of pot-ash.

c. Grey peas, sown the end of March, and *ploughed in* just before flowering, proved an excellent dressing for wheat.

GARDEN PEAS.

1. *Golden Hotspur*.

2. *Charlton*.

3. *Reading Hotspur*.

4. *Master's Hotspur*.

These are the earliest natural peas, and are sown on warm borders towards the latter end of October. If cultivated for three or four years in the same place they are apt to degenerate, and be later in fruiting; for which reason they should be had from a poorer soil, than that in which they are to be sown.

5. Essex Hotspur.

6. Dwarf Pea. This is sown the middle of October under walls or hedges, and at the latter end of January or beginning of February transplanted into hot-beds: the reason for sowing them in common ground, is to check their growth.

a. About half a foot high, and does not cover more ground than 6 or 7 inches square.

b. A variety double the size of *a.*—It is frequently sown in the open ground: the pods $2\frac{1}{2}$ inches long, contain six good sized peas.

7. Sugar Pea.

8. Sugar Dwarf.

9. Marrowfat. This and other late peas should be sown every two or three weeks.

10. Rose, or Crown Pea. Grows very large.

11. Rouncival, Egg Pea or Dutch Admiral.

12. Prussian Pea. The seed when dry a light green.

13. *Spanish Moretto.* A great bearer, and so *hardy* as to be sown the middle of February; the rows about 2 feet asunder, and the seed an inch apart.

14. Nonpareil.

15. *Sickle Pea.* Mostly cultivated by curious gentlemen for their own tables; and are rarely brought into the market.

16. *Bengal Pea.* Grows about $3\frac{1}{2}$ feet high; the upper petal purplish white, side ones a deep purple; the pods an inch and a half long, and contain three or four green seeds, about the size of a vetch.

The seeds of this was brought from Bengal, by an East India ship, to feed the poultry; it grew and ripened its seed, in the open ground.

If peas are not very carefully managed, taking away all those plants that have a tendency to alter before the seeds are formed, they will degenerate into their original state; therefore all those persons who are curious in the choice of their seeds, should look carefully over those which they design for seeds at the time when they begin to flower, and draw out all the plants which they dislike from the others. This is what they call *Roguing* their Peas, meaning hereby, the taking out

all the bad plants from the good, that the *farina* of the former may not impregnate the latter; to prevent which, they always do it before the flowers open; by thus diligently drawing out the bad, reserving those which come earliest to flower, they have greatly improved their Peas, and are constantly endeavouring to get forwarder varieties.

Culture, &c.

I. SEED.

- a. Should be saved from plants in full perfection in July.
- b. When the season is dry, the peas should be soaked in water the night before they are sown; or the drills watered: this will promote their growth, and cause them to come up with greater evenness, and regularity.
- c. Sown.

(1) The tall ones in drills 2 feet or $2\frac{1}{2}$ asunder, and the seeds 1 inch; the **Rose** or **Crown Pea** $4\frac{1}{2}$ feet asunder, and the seeds 8 or 10 inches.

(2) The dwarfs in drills 2 feet apart, and the seeds an inch apart; though frequently they are thrown in pretty thick.

The drills of the winter peas to run N. and S. and highest earthed on the E. side.

- d. The early sown produces the sweetest peas.
- e. Beginning of August the latest time to sow peas to bear the same year.

2. PLANT.

- a. When they break the ground, may be protected from birds by drawing the earth over them: they will then branch under the loose earth and be safe.
- b. To be weeded and earthed like the field peas.
- c. To be staked when eight or ten inches high.

The sticks to be cut fan fashion; for Rouncevals 7 feet, for Marrowfats 6, and for others of less growth 3 feet high.

If the rows range E. and W. the sticks should be placed on the S. side, as the plants will naturally incline towards the sun; a few sticks should also be placed on the opposite side to keep the plants up till they

have fastened themselves. The common method is to stick them on both sides, the sticks crossing at top.

d. Early Peas have been cut down two or three times, and each time shot up new stems, and bore peas.

3. USE.

a. The feed for the table, both when green and dry.

Markham, in his book on Husbandry, says, in his time (1635) they were used in bread in Leicestershire, Lincolnshire, Nottinghamshire, and many other counties; and in 1801 they were ground into meal.

The feeds have been roasted to supply the place of coffee.

b. The pods of the Sickle Pea are eaten like kidney beans.

c. The young leaves in sallads, and also boiled like Kale.

d. For making Yeast—Take a small tea-cup or wine-glass full of split or bruised peas, pour on it a pint of boiling water, and set the whole in a vessel all night on the hearth, or any other warm place; and the water will have a froth on its top the next morning, which will be good yeast. The colder the weather the longer it should stand to ferment.

” PEAT—(See Fuel).“

PHEASANT. (*Phasianus Colchicus*.)

It appears from *Hartlib's* Legacy, that in his time (1650) these birds were kept tame in great numbers by poor people, to sell to the London Poulterers; and he mentions a lady, who informed him, that she hatched to the number of 200 in one spring; whereof though many died, yet far the greater part came to perfection: The greatest difficulty lay in feeding them the first month, which was solely upon ant eggs; after which time they required only oats, and a grass plot to run on, which was bound with a lath fence. They lay from ten to fifteen eggs, smaller than those of a Hen, and similar to those of a Partridge, but paler; the young follow the mother like chickens—The

pheasant frequently breeds with the common poultry; and there is an instance of their breeding with the Turkey.

Besides the common wild Pheasant which was originally brought into *Europe* from the banks of the *Phasis*, a river of *Colchis*: we breed in our menageries a variety called the Ring Pheasant, and also the Golden P. (*P. Piæus*) brought from *China*, where it is called *Kin-ki*, and the Pencilled P. (*P. Nycthemerus*) also a native of *China*. Both the Ring and Golden Pheasants have been found at large in this kingdom.

It is desirable that as much pains were taken to introduce useful birds, as is taken to bring over Parrots, &c.—Among others may be pointed out the Crested Ph. in a domestic state among the inhabitants of *Mexico*; and the tame Parraka Ph. of *Cayenne*.

PIGEON. (*Columba Ænas*.)

1. Common blue P. *i. e.* the rock P. domesticated.
2. Rough-footed P.
3. Head crested.
4. Jacobin P. The feathers of the head and neck turn forwards, giving the appearance of a *cowl*.
5. Laced P. The feathers loose in their webs, and curled.
6. Turbit P. The feathers of the breast reflected both ways.
7. Fan-tail P. This variety has a greater number of feathers in the tail, which it always carries erect—There is a var. with fewer feathers in the tail—The Fan-tail is the kind usually kept in the West Indies.
8. Tumbler P. Tumbles round while flying; of these the Almond Tumbler is most valued, 80 guineas having been given for one.
9. Carrier P. This is extremely tuberculated about the eyes and bill—This sort is sometimes made use of for carrying letters; this is easily effected, for after one has been confined for some time, it is carried to a distance and let fly, and never fails to find its way home

- again. The letter is fastened under its wing. Is said to fly about 26 miles in an hour.
10. Powter P. This has the faculty of filling its crop with wind till it appears of a monstrous size.
11. Horseman P. These partake of the two last; are said to be *excellent breeders*, and *never to forsake the place where bred*. On this principle they become good *Carriers*—It is recorded of a *Dragoon P.* which is bred between the Horseman and Carrier, that it flew from *St Edmundsbury* to *Bishopsgate Street*, in $2\frac{1}{2}$ hours, being 72 miles.
12. (1) Common Spot P. This has a spot above the bill which is of the same colour as the tail. (2) East India Spot P. Differs from the former in having a black spot on the crown of the head, another on the hind part of the neck, and only some of the middle feathers of the tail black. A good breeder.
13. The Great-crowned P. (*C. Coronata*) which is of the size of a Turkey; and is said to be kept in the E. Indies, in court yards; has laid eggs in a menagery in Europe.

Pigeons breed ten or twelve times a year; seldom or never lay more than two eggs at a time, and set from fourteen to seventeen days; it is observed that one generally proves a *male*, the other a *female*—On a supposition that we allow *Pigeons* to breed nine times in a year, the produce from a single pair, at the end of four years, may amount to the number of 14,762: *Linnaeus* makes the number amount to more than 18,000.

Besides Pigeons being esteemed as a delicacy for the table; they are valuable on account of their dung, which is a good manure, and is also used for tanning the upper leather of shoes—If the *dove-house* is *cleaned before twelve o'clock*, the Pigeons will be but little disturbed by it. (See page 102.)

PINASTER. (*Pinus Cembra*.)

Culture, &c.

1. SOIL.

- a. Exceed most trees in growth, upon a poor light land.

b. Flourishes well on the sea-coast, although exposed in winter even to the spray of the sea.

2. INCREASED

a. By seed—Nurserymen sow the seed in the spring, but from the cones naturally opening, and dropping their seeds in June; that month is doubtless the proper time.

b. By cuttings.

There are some persons who are fond of propagating fir-trees from cuttings, which, if properly planted, will take root; but the plants so raised, will never arrive to near the size of those raised from seeds: they are also never inclined to an upright growth, sending out lateral branches, and becoming bushy, therefore this practice is not worthy of imitation; and unless for sake of multiplying a curious sort, whose seeds cannot be easily procured, should never be attempted; nor should the inarching of one sort upon another be practised for the same reason; for the trees so propagated will be of slow growth and of short duration.

3. TREE.

a. Frequently grows as fast as an alder, or an ash.

b. Grows to a very large size, and admits of being cut into very large scantlings, which are finer grained than other deal.

c. In about 40 years has grown upwards of 70 feet high.

4. USE.

a. From the quickness of its growth it has been thought worth planting, with a view of being cut down for fuel.

b. From it is extracted (by boring) the *common turpentine*, which is chiefly used by the farriers, and from which is distilled the oil of that name. The finer and more valuable part of the distillation comes first, and is called the spirit; what is left at the bottom of the still is the common resin.

c. *Pitch* is drawn from it by fire after the trees cease to afford turpentine; as by frequent boring they can be put to no use as timber. The refuse wood may be charred.

Trees afford turpentine after twenty years growth, and continue to do so for the space of twenty years longer.

- d. Candles are made of the turpentine.
- e. The kernels make a part sometimes in a *Swiss* dessert—They supply the place of mushroom-buttons in ragouts—And are recommended in consumptive cases, on account of their balsamic oil.

PISTACHIA. (*Pistacia Terebinthus*.)

Culture, &c.

1. INCREASED.

- a. By *nuts* planted in pots, and plunged into a moderate hot-bed.
- b. By suckers.

2. TREE.

- a. When first raised from the nuts to be gradually inured to the open air, to which they should be wholly exposed the beginning of June, and at the approach of winter screened from the frost under a hot bed frame, constantly exposing them to the air in mild weather.
- b. When the trees have been gradually inured to our climate for three or four years, they are to be planted against walls, or in a sheltered situation.
- c. Is a native of Arabia, Persia, and Syria.

3. USE.

- a. The fruit; which ripens in England in favourable seasons.

" This tree might well be introduced from *Europe* into *America*.—Its nut is wholesome and very agreeable."

PLANE-TREE.

- 1. Eastern Plane-tree. (*Platanus Orientalis*.) Var.

- a. Spanish or Maple-leaved P. Leaves larger and not so deeply cut.

- 2. Occidental or Virginian P. (*P. Occidentalis*.)

Culture, &c. of the Eastern Plane-tree.

1. SOIL.

- a. A moist soil near rivulets.

2. INCREASED.

- a. By seed ; which makes the best trees.
- b. By layers ; these will take root in one year, and then should be planted in a nursery for two or three years.

3. TREE.

- a. The younger they are planted where they are to remain, the better they will thrive.
- b. Has grown in Cornwall to a very large size.

3. USE.

- a. The wood is as firm, and solid as the beech.

This tree is supposed to have been introduced by the great Lord Chancellor Bacon, who planted them at *Verulam*, near St. Albans.

Culture, &c. of the Virginian Plane-tree.

1. INCREASED.

- a. Like the above, and also from cuttings, planted the beginning of October in a moist soil.

2. TREE.

- a. The trunk perfectly strait, and nearly of the same size to a considerable height.
- b. Has grown in England near 40 feet high, and a fathom in circumference.

PLANTAIN.

- 1. Ribwort Plantain or Rib-grass. (*Plantago Lanceolata*.) The seed of this plant is frequently sown with clover, &c. in laying down land for pasture, in the following proportion, viz. 2 lb. or 3 lb. of ribwort, 8 lb. of red clover, 4 lb. of white ; and one bushel of rye-grass per acre.

Cattle is said not to eat the leaves of this plant alone ; but to be particularly eager after the heads when in feed. They are given to Linnets, and other small birds, in cages.

Dr. Haller, in his *Iter Helveticum*, attributes the extraordinary richness and plenty of the milk, in some parts of Switzerland, chiefly to this and two other plants ; viz. Ladies Mantle (*Alchemilla Vulgaris*), and the Muttelina of Gesner and Camerarius.

- 2. Marine Plantain. (*Plantago Marine*.) This is cultivated, and sown with clover, in North Wales ; it is

greedily eaten by horses, cows and sheep, the last are also very fond of the roots. The inhabitants of Iceland eat it.

The Ribwort Plantain; Yarrow (*Achillea Millefolium*), and Creeping Tormentil (*Tormentilla Reptans*), were among the few plants that preserved their vegetation in pastures during the dry summer of 1800.

3. Buckshorn Plantain (*P. Coronopus*.) This was formerly cultivated in gardens as a fallad herb, and the seeds sown very thick in March; but having a rank disagreeable flavour, it was banished on the introduction of better plants. It was also in repute as an antidote against the bite of a mad dog, but is now partly fallen into disuse.

"The *Narrow-leaved Ribwort* is a vile weed in the grounds of *America*—nothing eats it."

PLOUGHS.

1. Without wheels—suited to stoney uneven soils where the wheel ploughs cannot act,
 - a. Suffolk iron plough, worked by two horses, or two oxen, and one man; suited to heavy land.
 - b. Rotheram P. suited to all soils.
 - c. Turn-wrist P. is adapted to hilly or banky land, the mould board turning so as to suffer the plough to make good work on its return, and still lay the furrow down the hill.
2. With one wheel. The advantage of wheels are, that they keep the share at an uniform depth.
 - a. One-wheeled ploughs are to be met with in most counties, of different constructions.
3. With two wheels.
 - a. Norfolk P. the end of the beam is raised high; it is suited to light soils, and is worked by two horses and one man.
4. With two shares. The first *skims the turf*, and lays it in the bottom of the former furrow; and the other brings up fresh mould, in order to cover the turf, by which easy process the land is immediately prepared to receive the grain, &c.

a. These have been made by different persons, and the end of the beam is supported either by one or two wheels.

5. With a double mould board—used for earthing plants and forming drains.

6. Double Plough, (see plate, figs. 13.) This is used in Roxburgshire to clean and earth turnips, and either divides by means of bars into 2 ploughs, to take the earth from the plants previous to hand-hoeing; or closes, and forms a single double-moulded plough for earthing them up. See the Farmer's Magazine, No. IV. p. 412, for a description of it.

The Reverend Mr. Lucas has made an improvement to the Essex plough, by a double swillyard, and double foot chain, which, he says, affords so much additional steadiment, as it is called, that it will turn a straight deep furrow, 40 yards long, without being touched by the ploughman.

PLUM. (*Prunus Domestica.*)

1. Ripening in July.—Early white, or Primordium P. Early black damask.

2. Ripening in August.—Little black damask. Orleans, a large round red fruit. Great damask violet. Green Gage. White Perdrigon. Blue Perdrigon. Black Perdrigon. Roche Courbon (red). Mirabelle (greenish-yellow). Royal Red.

3. Ripening in September.—Queen Claude (green). Little ditto (yellowish). Blue Gage. Drap d'Or, or cloth of gold (bright yellow). White Bonum Magnum, or egg plum (very large). Red Bonum Magnum, or great imperial (very large). Fotheringham (large dark red). Brignole (yellowish). Wentworth (yellowish). St. Catharine (yellowish amber.) Cheston (blackish). Imperatrice, or Empress (dark red). Apricot (large yellow). Pear (whitish yellow). Little green damask. St. Julian (dark violet). Damascene (dark blue).—The four last are of an inferior kind.—There is another kind of plum, called the Cherry P. valued chiefly as a curiosity; it blossoms early, and is often cut off by the cold.—In Yorkshire

is a species of plum, called the *Wine-four*, which sells when sound, for 21*s*. per peck; that is, 4 guineas per bushel!

We are indebted to John Tradescant, gardener to king Charles the first, for many kinds of our plums, which he procured from Turkey, and other parts of the world; he also introduced the Algier Apricot.

Culture, &c.

1. SOIL.

- a. Gravelly light soil produces the richest, but not the largest fruit.
- b. Strong soils should be lightened by a sandy or gravelly mould. Clay is particularly unfit for plums.

2. INCREASED.

- a. By grafting or budding on its own stocks.

3. TREE.

- a. Grows 15 or 20 feet high; the green gage, Orleans, &c. have a spreading head like that of the apple tree, while some of the dark violet oval plums have their branches straiter, and more upright.
- b. The Orleans, green gage, and some others, are often planted in the orchard manner, at 25 or 30 feet distance, and they, as well as other kinds, as wall and espalier trees, 18 or 20 feet asunder.
- c. Produces fruit from the eyes of the shoots, and on spurs arising on the sides and ends of the branches, of from two or three, to many years old.
- d. Pruning.

(1) Summer—Should be performed in June and July, retaining only some of the regular, moderate growing, side shoots, and main leaders, at full length.

(2) Winter—Retain at full length all regular last summer shoots, advancing below in vacancies, preserving all the short natural spurs on the sides of the branches, &c. but cut out too long, fore-right, projecting ones, old ragged snags and stumps.

(3) Standards—Retrench occasionally any very irregular and superabundant crowding growths, very long ramblers, and dead wood, with all suckers from the root and stem, and rambling shoots in the middle of the head.

c. Gardeners hasten the ripening of the fruit, by collecting it in baskets; and covering them with nettles.

4. USE.

a. The fruit.

b. The wood is in request for handles of knives, and its colour is improved to an elegant redness by boiling in lye, or with quicklime and urine.

c. The bark is used by country people to dye yellow.

POLECATS, see Vermin.

POMEGRANATE. (*Punica Granatum*).

Culture, &c.

1. SOIL.

a. A rich strong soil, and a warm situation.

2. INCREASED.

a. By layers in the spring, which will take sufficient root in a year's time.

3. TREE.

a. Grows 18 or 20 feet high.

b. Best season for transplanting is in the spring, but may be performed in autumn.

c. It is so hardy as to resist the severest cold of our climate.

d. Bears fruit at the extremity of the branches.

e. Pruning when trained as wall trees.

(1) Summer—Cutting off fore-right shoots.

(2) Michaelmas—Cutting out weak branches of the former year; and shorten the stronger.

The branches to be laid 4 or 5 inches asunder.

4. USE.

a. The fruit; which the tree often produces in great quantities in England, and of a full size; but not quite so well flavoured as the foreign. "The rind, a strong astringent, fixes or binds ink with a gloss not removed easily, and the ink flows well."

PONDS.

1. HOW MADE IN DRY PASTURES FOR CATTLE.

a. After removing the earth and forming a proper basin, take a quantity of lime, (ashes of lime will answer the

same purpose) and spread the same over the whole surface, about 5 inches thick; upon this bed of lime lay a coat of well tempered clay, 8 inches thick; this must be beat down extremely well with wooden hammers, to prevent the clay from cracking. Upon the top of the clay lay a second coat of lime, of the same thickness as the first; the whole is then paved or pitched with small stones, to prevent the cattle from injuring the materials of the pond; the clay will naturally hold up the water, and the lime prevents the worms from striking upward, or penetrating downwards to injure the clay.

- b.* Situated (if possible) where the corner of four grounds meet. The pond should be made about 20 yards square, 10 feet deep in the middle, and sloping on all sides. As a security for the water not running out, it should be puddled, or secured with clay, over which must be thrown loose stones or soil, and afterwards a pavement. The pond will fill by the rain in winter, and be replenished by the fogs during summer.

Geese are by some farmers reckoned healthful things among cows; not, however, by way of sweetening the grass; but of purifying the water: The idea seems to be founded in nature; and the practice may have been raised on experience; the violent agitation which geese and other water fowls, sometimes communicate to water, may be said to be nature's process, in purifying stagnant pools—Such water gives to the milk and butter of cows, which drink of it, a very bad taste.

2. FOR FISH.

- a.* The best situation is betwixt two hills, as near a flat as possible.
- b.* The head to be built with clay from 2 foot or two below the surface of the ground, 3 feet thick, and rammed down close, and sloped inwards; the top and sides to be covered with earth—The best time for beginning the work is the end of June, or early in July.
- c.* To prevent an overflow of water carrying away the fish; either place at the end, grates with close bars, or make channels of diversion higher than the current that leads to the pond—The last will also be of service to keep off the water, when the ponds are laid dry.

d. The sluices for emptying the ponds should have vent holes guarded with boxes, perforated so as water but not fish may pass.

e. Small ponds of standing water should be cleansed once in seven or eight years, and left dry one summer—Large ponds every two or three years, in October, when the bottom may be ploughed and sown with Oats, and the water returned the Michaelmas following.

Where there are two or three ponds above each other, only one to be drained at a time: If the mud is very deep, it may be removed, but not quite down to the dead earth.

f. No trees, except osiers or willows, should grow near the pond, as the fallen leaves and rotten wood, are pernicious to the fish; as is water running from hemp, dunghills, stables, and wash-houses.

POPLAR.

1. *White Poplar.* (*Populus Alba.*)
2. *Trembling Poplar.* (*Populus Tremula.*)
3. *Black Poplar.* (*Populus Nigra.*)
4. *Carolina Poplar.* Linnæus makes this a variety of the *Tacamahacca.*
5. *Lombardy or Po Poplar.*
6. *Black ditto.*

Culture, &c. of the White Poplar.

1. SOIL.

- a. Will thrive on a gravelly soil, and lofty situations.
- b. Flourishes in clay.

2. INCREASED.

- a. By young trees shooting from the roots.
- b. By cuttings of one or two years growth planted in rows 3 feet asunder; 18 inches in the row; and 1 foot in the ground; in two years they may be planted out—This will apply to the other poplars.

3. TREE.

- a. Of so quick a growth, that in some situations it will attain to full maturity in twenty years.
- b. Subject to warty excrescences, which, when large, imbibe moisture and bring on decay.

- c. The wood is white, soft, and stringy; and not subject to the ravages of the worm.
- d. If any of the Poplars are planted for walks, take only the male plants, for the female will multiply so fast as to form a grove instead of a walk.

4. USE.

- a. The wood makes good wainscoating, being but little subject to swell or shrink.—Floors, laths, packing boxes, and turners wares, are made of it. As it burns slowly, and with difficulty, it is well suited for laundry floors. It also makes very good light carts.

Turners, as soon as they have cut their work out rough, throw it into boiling water, which directly brings out the sap, and then it will keep its white colour.

Culture, &c. of the Trembling Poplar. (Aspen.)

1. SOIL.

- a. Will not grow well in clay; thrives in all other soils, and succeeds best in moist situations.

2. INCREASED.

- a. By young trees shooting from the roots.

3. TREE.

- a. Is easily transplanted, and of speedy growth.
- b. Nothing will grow under it.
- c. The wood is extremely light, white, smooth, woolly, soft, and durable in the air.

4. USE.

- a. The wood is used to make pannels or pack-saddles, wood cans, milk pails, clogs, pattens, &c.
- b. This tree proves to be almost incorruptible in the water or humid ground, when it is laid down without being stripped of its bark, and is therefore much used for water pipes, and gutters under ground.

Culture, &c. of the Black Poplar.

1. SOIL.

- a. Loves a moist black soil.

2. INCREASED.

- a. By suckers.

3. TREE.

- a. Grows rapidly and bears cropping.
- b. The wood is light and soft, and not apt to splinter.

4. USE.

- a.* The buds yield a yellow resinous unguent, formerly used in medicine.
- b.* Of the cotton down of the seeds paper has been made.
- c.* The wood is sometimes used by turners.
- d.* The bark being light like cork, serves to support the nets of fishermen.
- e.* The roots have been observed to dissolve into a kind of gelatinous substance, and to be coated with a tubular crustaceous spar, called by naturalists, *Osteocolla*, formerly much esteemed for bringing on a *Callus* in fractured bones.

Culture, &c. of the Lombardy Poplar.

1. SOIL.

- a.* Thrives best in a dry soil, but will grow very well in a moist one.

2. INCREASED.

- a.* Readily by cuttings.

3. TREE.

- a.* Is of a high towering shape, and very quick growth, attaining in a few years maturity—One year's shoot from a pollard tree was 8 feet high.
- b.* The wood is white, soft, and very soon decays in the air, but is more durable under cover.

4. USE.

- a.* Flooring of granaries with the wood, preserves the corn from the Weevil: For firing, the wood is little inferior to deal.
- b.* The branches are used for making baskets, but for which purpose they are too brittle.
- c.* The inner bark is a weak kind of bass.
- d.* In Tuscany it is planted to support the common vines. (See tulip-tree).

POPPY.

- 1. Opium Poppy. (*Papaver Somniferum.*)
- 2. Oriental or Eastern Poppy. (*P. Orientale.*)
- 3. Corn Poppies. (*P. Rhæas & Dubium.*)
- 4. Sprattling Poppy. (*Cucubalus Beben.*) A native plant. The leaves have something of the flavour of

peas, and proved of great use to the inhabitants of Minorca when the Locust had destroyed the harvest.

Culture, &c. of Opium Poppy.

1. PLANT.

a. Mr. Jones of Enfield sowed in 1799 five acres, kept the plants well weeded; and, notwithstanding they were injured by unfavourable weather, in May and June, he procured 21 lbs. of Opium from the surviving plants, and obtained abundant testimony of the superior quality of it.

b. Opium is got by making incisions into the heads when come to maturity, and the milky juice which issues from the wounds, is soon thickened by the heat of the sun, and is then gathered and made up into lumps.

c. Grows wild in England in uncultivated places.

3. USE.

a. Opium is a well known drug.

b. The seeds are sold in the shops by the name of Mawseed—The seeds have not the narcotic virtues of other parts of the plant.

Culture, &c. of Eastern Poppy.

1. PLANT.

a. This is cultivated in our gardens as a flower, and is increased either by seed sown in September, or by parting of the roots, being a perennial.

2. USE.

a. The Turks eat the heads by way of delicacy when they are green, though very acrid, and of a hot taste.

Culture, &c. of Corn Poppies.

1. PLANT.

a. These two sorts of Poppies grow wild among corn.

2. USE.

a. Sheep, Goats, and especially Hogs, are very fond of these plants. Sheep and Hogs have been even turned into the field to clear the corn of them. In Berkshire, where they are called *Redweed*, the inhabitants pull them to feed their swine at home; and it is said that they will increase so much the milk of a

- Sow, as to enable her to bring up a litter of sucking pigs for the market, with very little other help.
- b.* Rabbits thrive equally well on these plants, for whom they have been pulled up when in flower, and made into hay.
 - c.* The flowers of the *P. Rbxas* are used medicinally.
 - d.* In some parts of France they eat poppy oil, drawn from the seeds in their sallets, without any ill effects—The wild poppies of France are the same as those that grow in our own fields.

POTATOE. (*Solanum Tuberosum*.)

- 1. Aylesbury White, mostly planted for the table.
- 2. Ox-noble, cultivated for cattle; planted as late as April in gardens.
- 3. Surinam.
- 4. Red; not subject to the curl—This kind is said to have borne better for the beds being nearly covered with stones, bricks, &c.
- 5. Kidney.
- 6. Howard, or Clustered Potatoe: a very productive and hardy sort.
- 7. Red American Kidney Potatoe. Distinguished by its good qualities, and large quantity of its produce.
- 8. Chinese—A very productive sort; the roots whitish, 8 or 10 inches long, and of a slender shape; keeps good till Midsummer; as the roots spread they should not be planted close; are not subject to the curl.
- 9. Altringham Early White; never blows. The early Potatoe is supposed by some to be a distinct species.

Culture, &c. of the late Potatoes.

1. SOIL.

- a.* The best a strongish loam not quite approaching to clay.
- b.* On boggy ground potatoes are not subject to the curl.
- c.* Sheltered by woods and hedges are more subject to be blighted than in exposed situations.

2. INCREASED.

- a.* From seed—This is got by hanging the apples,

crabs, or oukles (as they are variously called) in October in a warm room till Christmas; then wash out the seeds, spread and dry them on paper, and preserve them from damp till March or April, when they should be sown.

From the seed of one plant, Potatoes are often produced, in shape and colour resembling all the varieties now cultivated.

Seed Potatoes do not blow till the third year.

b. From cut roots, each having one or two eyes.

Some advise their being cut a week before planting. It requires 20 bushels and a half to plant an acre with cut potatoes; and 37 bushels and a quarter of whole.

c. From whole potatoes—Small, as being riper, are by many preferred to large; even though no bigger than peas. Putrefaction does not always ensue with whole potatoes.

d. From the eyes only.

Three kinds of scoops have been invented for cutting them out; one resembles the half of a bullet-mould, another a cheese knife, and a third has a short curved blade; the last is reckoned the best; (see plate, fig. 15.) When the eyes are cut out at a season of the year when it would be improper to set them, they are to be laid on a dry table or floor for 48 hours, by which time the outside of the scooped part will become dry and covered with a saccharine powder, after which they are to be treated like the early Lancashire potatoe; the eyes should be planted closer than sets.—The saving upon large potatoes has been estimated at upwards of three-fourths, and upon small at least one-fourth; though in another account the saving has been reckoned only about half; the produce from the eyes is as great as from sets or pieces.

e. From the rind—Said to produce as great a crop as any other way.

f. From shoots that come up from potatoes left in the ground; the root being pulled off, and the plant put in like a cabbage.

The lateral stalks from the main ones, even if opening into blossom, will bear well. When a crop fails

in part, amends may still be made by laying a little dung upon the knots, and covering them with mould; when each knot will produce potatoes.

3. PLANT.

- a. Should be changed every year.
- b. Not to be planted deeper than 4 inches and a half.
- c. Planted from March till May or even June.

The early planted are the most mealy and best tasted; the late the surest crop, as they run no risk of being injured by the frost.

- d. Hand-earthed three or four times; or hand and horse-earthed once each.
- e. Pieces, planted 18 inches square—Whole, 3 feet or 2 feet and a half.
- f. Set at 12 or 14 inches, and the rows 13, which gives room for the horse-hoe. Set 1 foot, rows 2 feet asunder.

- g. Various methods of planting in beds, &c.

(1.) The earth dug 12 inches deep, after this, a hole should be opened about 6 inches deep; horse-dung, or long litter should be put therein, about 3 inches thick; this hole should not be more than 12 inches in diameter; upon this dung or litter, a whole potatoe should be planted, upon which a little more dung should be shook, and then the earth must be put thereon; in like manner the whole plot of ground must be planted; taking care that each potatoe be at least 16 inches apart. They must be twice earthed.

(2.) Where weeds much abound and have not been cleared in the winter, a trench may be opened in a straight line the whole length of the ground, and about 6 inches deep; in this trench the potatoes should be planted about 10 inches apart; (cuttings or small potatoes will do for this method); when they are laid in the trench, the weeds that are on the surface may be pared off on each side, about 10 inches from it, and be turned upon the plants; another trench should then be dug, and the mould that comes out of it turned carefully on the weeds. It must not be forgot, that each trench should be regularly dug, that the potatoes may be, throughout the plot, 10 or 12 inches

from each other; they should be twice hoed, and earthed up in rows.

(3.) A good crop may be obtained by laying potatoes upon turf, at about 12 or 14 inches apart, and upon beds of about 6 feet wide; on each side of which a trench should be opened about 3 feet wide, and the turf that comes from thence, should be laid with the grassy side downwards upon the potatoes; a spit of mould should next be taken from the trenches, and be spread over the turf, and in like manner the whole plot of ground is to be treated. When the young shoots appear, another spit of mould from the trenches should be strewed over the beds, so as to cover the shoots. It will be right to remark, that from the same ground a much better crop of potatoes may be obtained the following year.

(4.) Planted in beds 5 feet wide, intervals or alleys 3 feet, dug and thrown on the bed, and the sets 1 foot apart.

b. Planted with the plough.

(1.) Beginning of April draw furrows with a double-breasted plough, at about 2 feet 8 inches distance from each other, in which the potatoe sets are to be dropped by hand, at the distance of from 12 to 15 inches, and covered by splitting the ridges with the plough; when the weeds appear in great abundance, a small common one-wheeled plough is past up and down each side of the rows; this operation raises high ridges in the intervals between the rows; when the weeds appear again, the double-breasted plough passes again between the rows.

(2.) Planted upon every furrow at the distance of 10 inches, and about 4 inches deep; to be once hoed and moulded up.

i. When cultivated on a small scale, potatoes are taken up with a three-pronged fork, with flat tines—On a large scale, with a plough, the coulter being first taken out that it may not cut them; when those that appear to view are picked up, a pair of drags is run over the whole, which separates and exposes the potatoes that happen to adhere to the clods.

Should be taken up in dry weather.

k. How kept out of doors.

(1.) When sufficiently dry they are to be put together in heaps, in the shape of a roof of a building, covered closely with straw, drawn straight and to meet from each side in a point at the top, about six inches in thickness, and then covered with mould, closely compacted together, by frequent application of the spade; some make holes in the mould, at the sides and top, as deep as the straw, for the air to escape which arises from the fermentation; after the fermentation has ceased, the holes are closed to prevent the effects of frost or rain.

(2.) The greater part of the potatoes put in a large hole, lined with straw, and roofed as above; and also thatched with straw or the haulm of the potatoe.

If frozen, they should be put into cold water, which will restore them; but if put suddenly into hot water, they will be destroyed.

l. Potatoes are subject to a disease called the *Curl*.

(1.) Supposed to arise from one or more of the following causes, either singly or combined: 1. By frost, either before or after the sets are planted—2. From planting sets from large unripe potatoes—3. From planting too near the surface, and in old worn out ground—4. From the first shoots of the sets being broken off before planting, by which means there is an incapacity in the *planta seminalis* to send forth others sufficiently vigorous to expand so fully as they ought—and 5. To a white grub or insect feeding on the roots.

(2.) It is also imputed to setting potatoes grown in very rich and highly manured land; and to earthing very high.

(3.) Dr. Darwin supposes it to be owing to too long continuing to increase them from cutting.

To prevent the curl, it has been advised to steep the sets in a brine, made of Whifters' ashes, for two hours. Deep setting is always recommended; and salt is said to be the best preventative against the grub or insect.

Culture, &c. of the early Potatoe.

1. The Altringham (in Cheshire) white.

a. Planted in January, or as soon as the earth is dry, and the weather mild.

b. Planted in October, and if there come any severe frost, without snow, they are covered with peas haulm, straw, or other light covering. The whole crop is dug up in May, and another sort immediately put in, which is dug up in October following. New potatoes, of the first crop, have been brought to table in April.

2. Method of raising early potatoes in Lancashire.

a. Early seed potatoes are in some places planted upon the same ground from which a crop has been already taken, and which after having got up, about November are immediately cut up into sets, and preserved in oat-shells or saw dust, where they remain till March, when they are planted; after having taken off one sprit, it is to be planted with another of sufficient length to appear above ground in the space of a week.

b. Another and more approved method, is to cut the sets and put them on a room-floor, where a strong current of air can be introduced at pleasure; the sets laid thin, viz. about two lays in depth, and covered with the like materials, (shells or saw dust) about 2 inches thick; this screens them from the winter frosts, and keeps them moderately warm, causing them to vegetate; but at the same time admits air to strengthen them, and harden their shoots, which they improve by opening the doors and windows on every opportunity of mild soft weather; they frequently examine them, and when the shoots are sprung an inch and a half or two inches, they carefully remove one half of their covering with a wooden rake, or with the hands, taking care not to disturb or break the shoots: In this manner they remain till the planting season, giving them all the air possible by the doors and windows, when it can be done safely from frost; by this method the shoots at the top become green, leaves are sprung, and moderately hardy. They are planted in rows in the usual method, by a setting-stick, and the cavities made by the setting-stick carefully raked up; by this method they are enabled to bear a little frost without injury. The earliest potatoe is the superfine white kidney; from this sort, upon the same ground, have been raised four crops; having sets ready from the repository, to put in as soon as the other were taken up; and a fifth crop is

sometimes raised from the same land of winter lettuce.

3. Near Penzance in Cornwall, two crops are got in a year; by planting the kidney P. about Christmas or a few weeks before it, and which they draw in May; and plant in the same ground the apple P. They are enabled to do it owing to the mildness of the climate.

4. USE.

- a. A valuable root at our tables.

When potatoes were first introduced into this kingdom, about the latter end of the 16th century, they were roasted under the embers, and eaten with sack and sugar, or baked with marrow, sugar and spices, or candied by the comfit makers; in all which ways of dressing they were reckoned delicate meat. The poor then eat them raw; though they are in that state, in a very small degree, poisonous.

- b. For making bread.

The loss of weight in the baking, and the time and delicacy of the process, makes it far from eligible æconomy for the poor. Dr. Cuthbert Gordon has discovered a method of making flour, or meal of potatoes, that keeps sound for any length of time, (being impervious to the air) which, together with the bread thereof, is grateful to the taste.

- c. Cheese is made in Germany of potatoes in the following manner—The best mealy P. are selected, and half boiled in steam; as, by bursting, their flavour and efficacy are diminished: when cool, they are peeled, and finely grated, or beat into a pulp with a wooden pestle; three parts of this soft mass, and two parts of sweet curd, after expressing all its whey, are kneaded together, and allowed to stand two or three days in warm water, or four or five days in cold weather. The mixture is then formed into small pieces, like those of Westphalia cheese; dried in the open air, being shifted from place to place every day on the board, in order to promote their maturity.

- d. As food for horses.

To every 300 lb. of potatoes, washed and steamed, is added half a pint of salt, and occasionally a small portion of sulphur; this quantity will more than sup-

port a horse kept constantly at work for six days. Horses thus fed will perform with the greatest ease all the common labour of the farm, without hay or oats.

e. Bullocks will fat sooner on them than on cabbages or turneps; some mix about twice their bulk of cut hay or straw.

f. Cows fed on them will, with one bushel per day, and a small quantity of hay, yield as much, and as sweet butter, as with the best grass.

g. Will fat sheep.

h. Excellent for hogs—But for bacon and hams four bushels of pea-meal should be incorporated with four bushels of boiled potatoes, which quantity will fat a hog of 12 stone.

Some recommend their being given to cattle raw—others boiled—In Germany they are baked for hogs.

i. For feeding poultry, when boiled.

k. The skins may be pounded, and pressed into excellent cake, for cattle.

l. The stems cut for cattle. The roots are said by some to scarce grow afterwards; by others not to be injured.

m. As a fallow crop—Frees the land at the same time from weeds, and the quick grass.

n. The apples are pickled.

o. Paper has been made from the haulm.

The haulm is also used as litter; and to thatch hovels.

p. It was not uncommon, till forbidden by law, to extract a spirit from them.

In an equal quantity of ground occupied by potatoes, and by barley; the first will yield more spirits by fermentation, than the other, in the proportion of 566 to 166.

q. It is said, that being malted and managed as barley, a liquor like ale has been prepared from them.

r. for making starch; but is inferior to common starch, the linen not retaining the stiffness so long, nor acquiring that clearness, which common starch gives it.

SPANISH POTATOE. (*Convolvulus Battatus.*)

This plant grows very well in the open ground, and were some pains taken with it, would probably produce potatoes in England — The roots are imported from Spain and Portugal, by the London fruiterers, who sell them for sixpence per lb.

" POTTERY.

" The quantities used in country families, is immense, and all glazed with lead, a bad poison, slightly laid on. It behoves country families to attend to its poisonous effects. Encourage laying on better glazing, or avoid the use of this ware."

POULTRY. (*Phasianus Gallus.*)

1. *Wild*—These are sometimes, though rarely, found on moors in the northern counties of Scotland. The colour is commonly red or brown, mixed with spots of white and grey; the colour of the chick very much resembles that of a partridge: Both cocks and hens are round crested, and often the crests are so large, that they hang over the eyes, and must frequently be clipped; the legs are smooth, and short spurred; their eggs nearly double the size of ordinary eggs, and so hard, that when set under another hen, care must be taken to break the shell, after it is chipped.
2. *Tame.*
 - a. The above domesticated: In this state the hen continues to lay for a long time, and seldom inclines to hatch. They are more easily supported than common fowls, being extremely greedy of worms, &c. and will leave their companions of the dung hill, and in search of worms, &c. follow any plough that may be going in the neighbourhood.
 - b. Crested—Having a tuft of feathers, instead of a comb.
 - c. Darking—With two toes behind instead of one. A large breed one has weighed nearly 14 lb.
 - d. Frizzled—The ends of the feathers curled up, the flesh said to be firm and delicate; a tender kind brought originally from the East Indies.

- c. Rumpless—Without tail feathers.
- f. Bantam—With feathered legs and toes, a small race.
- g. Silk—The webs of the feathers are so disunited, that they appear like hairs. Brought from China.
- b. Ships bring fowls from the East Indies and China, some of which have very long legs; others have black bones, and lay light brown eggs.

It is to be wished some captain of a ship would bring home Turkish cocks and hens, which are described as differing from ours; especially in the variety and beauty of their colours.

Four or five hens should be kept to one cock; the hen sets 21 days, when hatched, the strongest chicks should be taken away and secured in wool, till the whole are hatched, and strong enough to be cooped; to be fed at first with split-groats, and afterwards with tail wheat; the best food for grown fowls is barley; to fatten them, barley or wheat-meal and milk.—As it requires a great deal of food to fatten cock chickens, it would be most advisable to cut them for capons.—Wherever poultry abounds, its influence is considerable in keeping down butchers' meat.

The eggs of these fowls, and also of those of the turkey, have lately been hatched in England by an artificial heat.—It is supposed that ducks would be more easy to raise, when thus hatched; the rearing of their chickens is attended with many difficulties.

3. Guinea Hens, see page 149.

QUICKSET. (*Cratægus Oxyacantha*.)

- 1. Varies, with the leaves and fruit larger; or large scarlet Hawthorn, or Quickset.
- 2. With double blossoms, and smaller fruit.
- 3. Blossoming twice a year; once of which is near or at Christmas. Called the *Glastonbury Thorn*.
- 4. With white berries; formerly grew at Bampton in Oxfordshire.

Culture, &c.

I. SEED.

- a. The berries to be buried one year in beds or pots of sand before they are planted.

b. Four bushels to be sown in an acre.

2. TREE.

a. Planted on the flat of a bank; or on the front or slope of it.

b. Planted in a single row from 6 inches to a foot asunder.

c. Planted in two rows, as

d. In some parts of Scotland in a barren soil, and exposed situation, it is common to plant a third or fourth part of beeches, intermixed with the thorns; the former being found to be a hardier and more thriving plant than the latter, and consequently better adapted to shelter a stormy country, as well as to strengthen the fence.

e. Hedge and wall—This is performed by building a slender wall about 3 feet high, immediately before and close to the row of young thorns, rising to the height of 18 inches above the level on which these are planted, and composed of dry stone, in some cases pointed with lime; it affords a complete shelter to the young plants, and as these grow up, their branches project over the wall, and being trained upon a line with it, the united effect of both is to form a fence impervious to every kind of cattle, even to dogs and lesser animals.

This fence is peculiarly adapted to road sides.

f. Planted both in the spring and autumn.

1. Four or five years old with strong clean stems, are always to be preferred to those that are younger and smaller.

2. In some places fences are made by grubbing up quicks in the woods and coppices of the length of 4 or 5 feet; they are planted in November or March.

g. To fill up gaps; bend down shoots of half a yard or 2 feet long, and where room permits make a hole in the bank with a shovel, in which the shoots are to be tied down with hooked sticks and covered over with earth, where they will take root and form a new hedge.

b. Cut down to the ground to make the edge thick at bottom—Trimmed to a point at top makes them thick

at bottom; if trimmed with an instrument like a reaping-hook with a long handle, a man will do a great quantity in a day.

As trees scarcely grow after the solstice, Linnæus advises that hedges should not be clipped after that time.

i. Defended from cattle—1. with post and rails.—2. with a double or single dead hedge, in the latter case the quickset is wattled into it.—3. by washing the young hedge with lime-water—and 4. the hair from a raw hide, with all the impurities adhering, laid in small quantities, near the roots of the thorns, has been found sufficient security from the teeth of cattle.

k. A tree of this kind has grown to 9 feet $1\frac{1}{4}$ inch in circumference, 4 feet from the ground; one arm of which tree extended above 7 yards.

3. USE.

a. Makes better hedges than any other shrub; on account of the stiffness of its branches, the sharpness of its thorns, its roots not spreading wide, and its capability of bearing the severest winters, without injury.

b. The wood is tough, and is formed into axletrees, and handles for tools.

c. A decoction of the bark with copperas, dyes black.

d. In *Kamschatka* the inhabitants make a wine of the berries.

QUINCE. (*Pyrus Cydonia*.)

Var. 1, Pear-shaped. 2, Apple-shaped. 3, Portugal with a tender pulp. 4, Eatable, having a tender pulp, and is sometimes eaten fresh.

Culture, &c.

1. SOIL.

a. Will thrive almost any where; but they generally affect a moist situation, and are therefore often planted along ponds and ditch sides in out grounds, &c.

2. INCREASED.

a. By grafting either on its own, pear, or hawthorn stock.

- b. By cuttings of the young shoots of the branches, planted either in spring or autumn.
- c. By layers in autumn, which will be fit to plant off the following year.
- d. By suckers taken in autumn.

3. TREE.

- a. Grows 10 or 15 feet high.
- b. Is trained as espalier at 18 or 20 feet distance, or planted as standards at 20 or 30 feet.
- c. The branches should generally be permitted to extend in length, without shortening them by pruning; observing only to keep their stems clear from suckers, to cut off cross branches and upright shoots.
- d. Dr. Hales, in his Statical essays, says, he has observed the canker produced in this tree by rotten fruit being left hanging on it all the winter.

4. USE.

- a. The fruit, of which is made a marmalade, &c.
- b. In N. America they make a wine or liquor of the fruit, called *Quince-drink*; and likewise draw a pleasant and grateful spirit from it.

RABBITS.

1. SORTS.

- a. *Common grey wild Rabbit.*

The wool is pared off the pelt as a material for hats.

- b. *Silver haired wild Rabbit.*

The colour is a black ground thickly interspersed with single white hairs. The skin of this is dressed as a fur; and as the skins sell for about four shillings a dozen more than those of the common sort, it is a sufficient inducement for propagating it.

- c. *Orchard Rabbits.* These are kept in pits dug like saw-pits, in orchards, &c. and lined on the sides with boards or bricks; and also boarded at bottom, one plank of which is to be left loose, and set on end, for the Rabbits to burrow; and to serve for a trap to catch them when wanted. The grey is the proper kind, and grows, kept in this manner, to a large size, and is little inferior to the wild—Must be regularly fed.

d. Hutch Rabbits—These are kept in cellars, &c. in a box about $2\frac{1}{2}$ feet, by $1\frac{1}{2}$, and 2 feet high, with a partition for the doe to make her nest in; it has a grated door, and a trough for dry food.—Their food is bran, grains, or oats, and cabbage leaves, mallows, &c. Too much of the green food, especially if given wet, occasions their having the rot, or being beaned, as it is termed. If fed principally with Juniper, it will give a fine flavour to their flesh, and make it equally good as that of the wild rabbit. A small quantity of milk is by some given to the does when they have young.

(1.) The *butch Rabbits* vary very much in colour, as white (these have often red eyes), black, black and white, yellow; of the last they are always females.

(2.) *French Rabbits*—These have very long fine hair.

2. WARREN.

a. Land not worth more than two shillings per acre pays better as a warren than if cultivated.

A rich soil is a disadvantage, as a flush of grass after a dry season, is found to produce a scouring, which carries off great numbers.

b. In stocking a warren, artificial burrows are in some places bored with an auger, of a diameter large enough to make a burrow of a sufficient width—Artificial burrows are made to reconcile the rabbits to the ground, and to preserve them from vermin, until they have time to make their own burrows.

c. One male is considered as sufficient for six or seven females; and the nearer they can be brought to that proportion, the greater stock of young ones may be expected; it being the nature of the males (*unnatural* as it may seem) to destroy their young; more especially, perhaps, when their proportional number is too great. The above proportion of sexes is to be attempted by killing at the close of the season, all the bucks which are taken, and turning loose all the does.

- d. Methold*, in *Cambridgeshire*, is famous for the best sort for the table; the soil there is sandy, and full of mosses, and the *Carax* grows.
- e.* Faggots have been partly substituted for hay in snow, for rabbits, the peal of which they eat.

RADISH. (*Raphanus Sativus*.)

1. With a spindle shaped root.
 - a.* Sallad Radish.
 - b.* Short-topped R. This sort is sown for early crops.
 - c.* Long-topped R. Varies in the colour of the root, as a deep or light red; the last called Salmon R.
 - d.* Naples R. Root white.
2. With a round root.
 - a.* White Turnep R. Sown from March till September.
 - b.* Red ditto.
 - c.* Black Spanish R. Sown from July till September.
 - d.* White ditto.

Culture, &c. in fields.

1. SEED.

- a.* Two or three gallons of seed per acre.
- b.* Sown in March on furrows made with a two or three-cheped plough about 10 inches apart.

2. PLANT.

- a.* As soon as the plants appear every other row is cut up with a horse-hoe, leaving the rows 20 inches apart. When the plants get two or three rough leaves, they are hoed out to the distance of from 10 to 15 inches apart in the rows, and then kept clean by a second horse and hand hoeing, if necessary.
- b.* The crop is seldom fit to reap till October, and sometimes is out in the fields till near Christmas, without receiving any injury from the wet weather; it being necessary that it should have much rain to rot the pods, that it may thresh well.

3. USE.

- a.* The radish is cultivated in Kent for seed for the London market.

Culture, &c. in gardens.

1. SEED.

- a.* Sown on Hot-beds in January and February.
- b.* Sown in the open ground for winter and early spring crops.
 - (1.) In September among other crops; these, if not destroyed by frost, will be fit for use soon after Christmas.
 - (2.) The latter end of October, under walls or other fences: These will be fit for use the beginning of March.
 - (3.) About Christmas. These are not to be quite so much sheltered as the last, and covered with clean straw; will be fit to draw the end of March, or beginning of April—Rows of beans are sometimes planted with this crop.
- c.* Sown with Carrot or Spinage seed; in the former case it sometimes happens, that the Carrots succeed when the Radishes are cut off by the frost; when both succeed, it is necessary to draw the radishes when very young.
- d.* For full crops once a fortnight from March till August.

2. PLANT.

- a.* In frosty weather they are to be covered with clean straw, which should be raked off whenever the weather is mild.
- b.* When they have got five or six leaves to be hoed to 3 inches if it is intended to draw them very young; if not, to 6 inches.
- c.* For seed: The best roots to be planted early in May, in rows 2 or 3 feet distance, and the roots 2 feet asunder; and watered till they have taken root.

The pods, when ripening, must be protected from birds.

- d.* The roots may be preserved for use during winter, by drawing them before the frost sets in, and laying them in dry sand.

3. USE.

- a.* The roots raw.
- b.* The tops boiled like spinage.

RAPE. (*Brassica Napus.*)*Culture, &c.*

1. SOIL.

- a. Will grow on almost any soil.
- b. Does not impoverish land.
- c. Should be ploughed N. and S. for the advantage of sun.

2. SEED.

- a. The best seed is large, black, and free from red ones—Should be kept very dry.
- b. To be sown in June.
- c. 2 lb. of seed per acre, broad cast.
- d. Should be sown with two fingers and the thumb; to prevent its coming up in patches.
- e. Drilled 1 foot, or 14 inches apart.
- f. The practice of sowing Rape and Turneps together, improper.
- g. Sown the middle of June, and the plants transplanted the middle of August, in ridges 2 feet asunder, and 16 inches between; the plants to be horse or hand-hoed; and the earth drawn round their stems.—A rood will raise sufficient for 10 acres.—In the spring this crop may be fed with sheep.
- b. The seed ripens from July to September.

As the seed very soon sheds, it is either threshed on cloths in the field, or carried to the threshing-floor in little four-wheeled waggons made with poles, and cloths strained over them; the diameter of the wheels about 2 feet; the cloth-body 5 feet wide, 6 long, and 2 deep; and drawn by one horse; the whole expense not more than thirty or forty shillings. This method is used to save turnep-feed.

- i. Should not be sown two years running, on the same land.

3. PLANT.

- a. Succeeds best after beans, turneps, or cabbages.
- b. One acre of Rape, supposed to be equal to three of turneps.
- c. Does not injure the quality of the wool of sheep that feed upon it.

- d. The plants raised from the broad cast to be hoed in September to about 1 foot distance.
- e. If any fail, to be supplied from other parts the latter end of October, or beginning of November.
- f. To destroy the slugs which feed voraciously on the young plants; strew over them a mixture of slacked lime and wood-ashes; 10 bushels of lime and 15 of ashes will do for an acre.
- g. Will produce fresh leaves after the first are eat off.
In Essex they feed it off with hogs, and then let it stand for a crop.

4. USE.

- a. The seed furnish a large quantity of expressed oil, called Rape Oil—After the oil is expressed, the seeds are used to fatten oxen, and manure land.
Oil-cakes are apt to render the fat yellow and rank; to remedy this, the cattle should be fed with dry fodder for a fortnight or three weeks before they are killed.
- b. Affords winter food for cattle, and is the most fattening of any winter food for sheep; it is sown also for feeding sheep and ewes in the spring.
- c. The straw and chaff burnt for the ashes; which are as valuable as the best pot-ashes.
- d. When the straw is strong it is used for inclosing fences in farm-yards; and is always excellent for littering the straw-yards, cow-sheds, and the stall-fed cattle.

RASPBERRY.

- 1. Common Raspberry (*Rubus Idæus*.)
 - a. With red fruit.
 - b. With black fruit.
 - c. With white fruit; sweeter than the red.
 - d. Double bearing; the first crop ripens in July, and the second in October; but those of the latter season have seldom much flavour.
 - e. Cane-raspberry.
 - f. Without prickles. This produces but few fruit and those small.
- 2. Virginia flowering Raspberry (*R. Occidentalis*.)
This is cultivated more for its flower than fruit; which has little flavour.

Culture, &c.

1. SOIL.

a. The best a fresh strong loam.

2. INCREASED.

a. By suckers.

b. By layers; trees from these have better roots, and are not so liable to send out such numerous suckers as the former.

3. TREE.

a. Planted 2 feet asunder, in rows 4 or 5 feet apart—New plantations should be made once in three or four years; and planted in March or October.

b. In July clear off straggling suckers between the rows, to admit the sun and air to the fruit.

c. In October cut out the dead shoots, last summer's bearers; and thin the young shoots to three or four each stock; and prune them at top, at about 4 feet high.

4. USE.

a. The fruit; of which is also made a jam, and wine. The juice, or a syrup of the wild fruit, is used as an agreeable acid for making punch, instead of oranges or lemons; and the distilled water is cooling, and very beneficial in fevers.

REED.

1. Common Reed. (*Arundo Phragmites.*) An excellent covering for barns and stables, as it will preserve the roof twice as long as tile. Screens are made of it to keep off the cold wind in gardens; and they are laid across the frame of wood work as the foundation for plaster floors.

The inhabitants of Lapland use the panicle to dye cloths a yellowish green colour.

2. Sea Reed. (*Arundo Arenaria.*) It grows only on the very driest sand upon the sea shore; and it prevents the wind carrying the sand from the shore, and dispersing it over the adjoining fields; which is not unfrequently the case where this reed is wanting. Many a fertile acre hath been covered with unprofitable sand, and rendered entirely useless, which might have

been prevented by sowing the seeds of this plant upon the shore. It is used for thatching; for making ropes; and when bleached, for making mats.

Queen Elizabeth, in tenderness to such of her subjects who lived on sandy shores, wisely prohibited the extirpation of this plant, in order to prevent the misfortunes which have since happened, of having half the parish buried in the unstable sands, by the rage of the tempest.

3. Reed-Grass. (*Poa Aquatica*.) Is an extremely useful grass to sow upon the banks of rivers or brooks.

The Dutch sow Sea Mattgrass, (*Nardus Stricta*) on their sand banks, that the sand may not overwhelm the neighbouring parts. And the London Society for the encouragement of Arts, &c. assure us, they have been credibly informed, that land has been gained on the coast of Holland, by fixing rows of whisps of straw upright in the sand, about a foot distant from each other, or by fixing stakes at proper distances from each other, and wattling straw-bands between them.

RENNET.

USED IN MAKING

1. Gloucester Cheese—To two gallons of water, made salt enough to bear an egg, add one pennyworth of mace—one pennyworth of cloves—a handful of sweet briar and hawthorn buds—a small quantity of allum (about the bulk of a small walnut) the same quantity of sal prunellæ—a small quantity of cochineal (a small “pinch,” the bulk of half a hazle nut)—and, if to be had, two or three bay leaves. Pound the allum, sal prunel, &c. and, having mixed the several ingredients with the salt and water, add five vells; or, if small, six or seven. In about ten days the Rennet will be fit for use.

Cheese (and that as good as any other made in the county) has been made by putting the vell into a little cold water—The vell is not to be used a second time.

2. Cottenham Cheese.—Nothing more is necessary than salting down the bags, in which state they remain for

twelve months; about six of these bags will make two gallons of brine, strong enough to suspend a new laid egg, which being put into a jar, is fit for use in about a month, when a gill of it to every four gallons of new milk, or warmed as from the cow, is sufficient: The milk should be of the same age or meal, and much depends upon breaking the curd with the hands, for unless that is done very completely, the whey cannot be expressed; any of which remaining in the cheese, communicates a harsh fiery taste, produces blue mould, and leaves the cheese full of holes, or cells; like a honey-comb.

It has been observed of the effects of different rennets, that their efficacy reaches no farther than to do away the faintness of the vells; and thereby to render the rennet perfectly sweet.

RHUBARB.

1. True or Officinal Rhubarb. (*Rheum Palmatum*.)
2. Common Rhubarb. (*Rheum Rhaponticum*) Has been long cultivated in English Gardens for the sake of the foot-stalks of the leaves, which are frequently used for making tarts.

This and the *Rheum Undulatum*, were at one time raised in this country for the true Rhubarb.—It is remarkable, that if the *Palmatum* and the *Undulatum* are planted near each other, they will probably produce a mongrel plant, the seeds of which are not fertile.

Culture, &c. of the True Rhubarb.

1. SOIL.

- a. A sandy soil, and somewhat elevated situation, is thought to be most proper for it.

The manure formed of one part good rotten dung, one part sifted coal-ashes, and two parts lime, which must be previously slacked, and mixed with a proper quantity of mud or waste, taken from a mill pond, and often turned. To be ploughed in very deep.

- b. At Suchur, a province of Tartary, where it flourishes in the greatest abundance, and from whence the merchants carry it all over the world, the country is

rocky and mountainous, the soil red, with a stratum of stone under it, sometimes boggy, being every where intersected with numerous rivulets.

2. INCREASED FROM SEED.

- a.* Sown on an early hot-bed; the plants to be inured to the weather, after having got their first leaves; in October or November they are to be transplanted into the mould intended for the next years hot-bed; and the February following planted in very deep black garden mould, and treated like artichokes.
- b.* Sown in the natural ground March the 16th, and transplanted where they are to remain about the 20th. By some the seed is sown early in February, and transplanted when of a size that cabbage plants are set out for a crop.
- c.* The seed may be sown where the plants are to remain.

3. INCREASED FROM BUDS, OR EYES.

- a.* The taking of these with a small part of the root does not injure the root; has the following advantages over sowing of seed; a year is gained in the growth; is in less danger of being eaten by vermin; not so uncertain of its growing; is not so tender, neither does it want transplanting, or any other care than keeping the ground clear of weeds.
- b.* The crowns of the plants will produce tolerable good Rhubarb in four or five years, but not so large and plentiful as from seed.

4. PLANT.

- a.* Bears seed in three or four years, which is ripe in October.
- b.* If the roots are covered with litter, or the earth drawn over them in winter, they will rise the stronger in the spring.
- c.* The earliest period at which the roots are useful is at four years growth, but they are supposed to increase in virtue, by remaining in the earth seven, eight, ten, or even twelve years.
- d.* Are planted at four, six, or eight feet apart.
- e.* Roots five years old have weighed upwards of 70 lb.

5. METHOD OF CURING THE ROOT.

a. At Suchur in Tartary—The roots are dug up in winter before they put forth leaves, because they then contain the entire juice and virtue of the plant; the root being thoroughly cleaned, is cut transversely, and the pieces are placed on long tables, and turned carefully three or four times a day, that the yellow viscid juice may incorporate with the substance of the root. If the roots are not cut within five or six days after they are dug up, they become soft, and decay very speedily. Four or five days after they are cut, holes are made through them, and they are hung up on strings exposed to the air and wind, but are sheltered from the sun-beams. Thus, in about two months, the roots are completely dried, and arrived at their full perfection.

b. In England—The roots are dug up from summer to January; in warm weather they are dried in the shade; in cold an artificial heat is necessary, as a hot-house or moderate heated oven; if dried too fast, they become wrinkled and horny; if too slow, they become mouldy and useless. When dug up they are clean washed, the small fibres cut off, and the outer rind pared or rasped off; then divided into pieces about one ounce weight, and the middle cut out—Lastly, they are strung on packthread to dry, none of the pieces touching each other.

The rind for tinctures is full as good as the best part of the root.

It is the practice of some to take the roots up early in the spring, or in autumn, when the leaves are decayed; the roots washed, and rubbed over, after being rasped or filed, with a very fine powder, which the small roots furnish in beautiful perfection.

6. USE.

a. The use of Rhubarb, as a drug, being well known, it will be sufficient here to establish the virtue of what is raised in this kingdom.

(1.) Most of the apothecaries in Edinburgh use Rhubarb raised in Scotland, (from Siberian seed), and for several years there has been no other used in the Royal

Infirmaries there. When a sound root of this is well dried, and properly dressed, it is in *no* respect inferior to what comes from Russia—Opinion of Dr. Hope of Edinburgh.

(2.) Rhubarb raised in Somersetshire was little (if at all) inferior to the best brought from Russia, or Turkey, and fully sufficient to supply the place of foreign Rhubarb—Dr. Falconer of Bath.

(3.) The London Hospitals, as *Guy's*, *St. Thomas's*, and *St. Bartholomew's*, all use the Rhubarb grown by Mr. Jones at Enfield; and a committee at *Apothecaries Hall* have given the most decisive testimony of its equal excellence with the foreign drug.

b. The seeds of the English plant contain the medicinal virtue of the root in an eminent degree.

c. A strong infusion in white wine of pieces of the roots, not thick enough for drying, has been given with success in the dysentery in cattle.

d. A marmalade is made of the recent stem, and is considered as a mild and pleasant laxative, and highly salubrious—It is prepared by stripping off the bark, and boiling the pulp with an equal quantity of honey or sugar.

e. The leaves give to soup an agreeable acidity, like that of sorrel.

f. It is supposed that it would afford a beautiful red dye—The husks of the seeds of one sort of Rhubarb gives a very fair and deep purple; and from the underlide of the leaves and stalks exudes a hard gum.

RICE. (*Oryza Sativa.*)

The result of some experiments to cultivate India dry or mountain Rice, was, that it will not produce grain in this climate; but as the quantity of the blade was uncommonly great, it is not impossible that it might be advantageous to sow it as food for cattle; for a very large proportion of stock might certainly be maintained upon an acre of it.

Though the dry rice did not succeed, perhaps, better success would attend an attempt, to cultivate in England the Spanish marsh rice—*Ellis*, in his voyage to Hudson's

bay, mentions a kind of wild *rice* growing in abundance near our settlements, by the sides of lakes and rivers; which if cultivated would make good food.

ROCAMBOLE. (*Allium Scorodoprasum?*)

Culture, &c.

1. SOIL.

a. Delights in a sandy loam.

2. INCREASED.

a. By cloves and off-sets of the roots planted in September, 6 inches apart.

3. PLANT.

a. The part chiefly made use of is the heads of the flower stem, composed of many bulbs, which as soon as they are ripe should be gathered and kept dry. The roots are also used.

4. USE.

a. This is a mild sort of garlic, formerly highly esteemed for its high relish in sauces; a small quantity of it going further than many onions.

ROOT-GRAFTING

Consists in grafting a fine fruitful branch upon a root—The manner of performing it is to take a graft of the tree you design to propagate, and a small piece of the root of another tree of the same kind, or very near it, or pieces of roots cut from such tree as you transplant, and whip-graft them, binding them well together.

This tree may be planted, where you would have it stand, for the piece of root will draw sap, and feed the graft; as the stock does in other methods.

ROSEMARY. (*Rosmarinus Officinalis.*)

Culture, &c.

1. SOIL.

a. Bears severe weather much better in a poor dry soil, than a rich moist one.

2. INCREASED.

a. By slips or cuttings taken in the spring of the year, just before the plants begin to shoot; these should be transplanted where they are to remain early in September.

3. USE.

a. The flowers, leaves, and seeds, are used in medicine. Hungary water is made of the flowers, distilled with rectified spirit of wine.

There are several varieties, viz. the narrow leaved (the kind used); the broad leaved; the white and the yellow striped. (See pa. 14.)

RUSHES.

1. DESTROYED

a. By taking a single crop of oats in the following manner; by ploughing one furrow with a good dressing of dung, harrowed in, upon which the crop of oats with the grass feed only.

b. With the hoddling scythe. This implement is nothing more than a short strong scythe; the blade is about 20 inches in length, but curves in a different manner to the common scythe; the edge is nearly, one way of it, in a straight direction from heel to point, but the flat part of the blade forms a curvature, which varies about 4 inches from a straight line. The sneath, or sneyd, to which the blade is fixed, is about 3 feet 6 inches long, and has one scythe-like handle placed about 18 inches from the top: When the work is performed, one hand is placed upon the top of the sneath, and with the handle in the other, the crown of the rush roots, by a smart stroke of the implement, is scooped out by the convex part of the blade. The most proper season for this business is early in the spring.—The rush roots should be carried off to form a compost, and the hod holes, or cavities, filled level to the surface of the land with soil, and hay seeds to be sown therein.

c. By a top dressing of coal or wood ashes.

2. USE.

a. The pith of Cluster flowered Rush (*Juncus Cæglomeratus*) and Common Soft-Rush (*Juncus Effusus*) is used instead of cotton to make the wick of Rush lights.—And both plants are made into ropes and baskets.

b. Bull-rush. (*Scirpus Lacustris*.) Cottages are sometimes thatched, and pack-saddles stuffed with it. Bottoms of chairs are very commonly made of this rush;

if it is cut at one year old it makes the fine bottoms; coarse bottoms are made of it at two years old; and those that are still older mixed with the leaves of the Yellow Flag, (*Iris Pseud-Acorus*), make the coarsest bottoms of all. Mats are likewise made of it, alone or mixed with the aforesaid leaves.—From the pith a kind of paper may be prepared, by pressing it, and afterwards giving it consistence by a proper addition of size. When fodder is exhausted, cattle will live upon it, and swine eat greedily the fresh roots.

- c. Hares-Tail Rush or Cotton-grass (*Eriophorum Vaginaturn.*) Springs in February and March. Sheep are remarkably fond of it, not only of the leaves, but of the roots; working in the ground up to the eyes for to get them. Shepherds assert that sheep reduced by hunger will recover faster and thrive much better upon this plant than turneps. It is a valuable plant for three or four weeks; but after it has flowered the sheep totally neglect it. Wicks of candles are made with it by the poor.

Grows naturally on moors and bogs.

- d. Rushes and sedge are mown for litter and for fodder.

- e. Common soft Rush (*Juncus Effusus*) are near Farnham cut about Midsummer; made or dried as hay; and put up in a sort of mow, under cover, until the tying season of Hops, the ensuing spring; when they are tough, and well adapted to the purpose of making bands or ties.

- f. Rushes were sown on a part of the banks of the Duke of Bridgewater's canal, to keep the earth firm.

- g. Rushes dug up with all their roots and some soil, make strong banks for rivers.

RYE. (*Secale Cereale.*)

1. Spring, white, or silvery Rye.
2. Winter, or black Rye.

Culture, &c.

I. SEED.

- a. Two Winchester bushels sown or two bushels and a half.

- b.* White or silvery rye is sown with success in the spring;
i. e. in March or April.
- c.* Winter rye sown in August, in September, or October.
- d.* Sown with wheat—one peck of rye with one bushel of wheat—This is called *meslin*; it appears to be a very improper mixture, as they seldom ripen together.
- e.* Sown among a thin crop of turneps, and both fed off together.
- f.* Sown with winter tares for soiling cart horses—The Rye nourishes, protects, and draws up the Tares.

2. USE.

- a.* For making bread, alone (this is not so general as it used to be), or mixed with wheat flour; the effects it has in the latter case, is, that it renders the bread somewhat more moist, and preserves it somewhat longer from growing stale; this mixture is reckoned both wholesome and nutritious.
- b.* Used by the distillers.
- c.* The plant as early spring food for sheep.
Given freely and in large quantities to sheep, it cures them of the rot in a few days, provided they are not far gone with the disorder.
- d.* Fed off by horses and cows in the spring; or mown and given them in stables.
- e.* In North America it is cut green and *made into hay*.
- f.* The straw is excellent for thatching, and is also used by brick-makers, collar-makers, and for packing.
- g.* Is so much the *aversion of poultry* that they even avoid the place where it grows; it is therefore sometimes sown in head-ridges, around the farm-houses and yards, as a protection to the other grain.
- b.* It is said that a very small quantity of rye sown among wheat, prevents the wheat being blighted or mildewed.
- i.* The grain has been prepared in France as coffee, of which it has something of the smell, and some say of the qualities.

The spring rye was introduced into this country about half a century ago; probably from Poland, as it is sometimes called Dantzic rye.

SAFFRON.

1. True Saffron (*Crocus Sativus.*)
2. Bastard Saffron (*Carthamus Tinctorius.*)
3. Turkey Saffron (*Colchicum Variegatum.*)

Culture, &c. of True Saffron.

1. SOIL.

- a. A temperate dry mould.
- b. It is always planted upon fallow ground—That is preferred which has borne barley the year before.
- c. The land to be ploughed three times, 1. about Lady-day, 2. in May, and 3. about midsummer—The furrows of the first ploughing to be drawn closer together and deeper than for corn—The land to be manured before the second ploughing.

2. INCREASED:

- a. By off-sets of the roots, planted commonly in the month of July, a little sooner or later, according to the weather.

The quantity of off-sets to an acre is generally about 16 quarters, at 3 inches apart.

3. PLANT.

- a. When they begin to spire, and are ready to shew themselves above ground, the land must be carefully pared with a sharp hoe, and the weeds, &c. raked in to the furrows.
- b. The flowers are gathered as well before as after they are full blown, and the most proper time for it is early in the morning. They are to be spread upon a table, and the chives picked out with a good part of the style, and the rest of the flower is to be thrown away.—The chives are to be dried on a kiln, and lastly made into square cakes.

4. USE.

- a. In medicine.

The best Saffron comes from Smyrna, but *Hasselquist* observes, that it is frequently adulterated, and as a physician is not certain of this drug, he will find it consistent with prudence, to prescribe English Saffron in a larger dose, than to prescribe one thing, and get another.

Culture, &c. of Bastard Saffron.

1. SEED.

- a.* Sown singly in drills $2\frac{1}{2}$ feet asunder.

2. PLANT.

- a.* At three weeks old the plants should be thinned to 6 inches apart, and the land cleared of weeds; at the second hoeing the plants to be left 1 foot apart, requiring afterward a third hoeing, after which they need no farther care.
- b.* The flowers are to be cut off when in perfection and when dry; the petals, the part used, is to be dried in a kiln like the true Saffron.

The manner of preparing them in Egypt (from whence Europe is generally supplied with it, under the name of *Saffranon*) is as follows; they are gathered fresh, and pressed between two stones, to extract the crude juice which is thrown away; the flowers after being pressed, are washed several times in water, which is brackish in Egypt; by this the remaining acrid juice is washed away; they are then taken out, as much at a time as a person can hold in his hand, and the water is so well pressed out as to leave the impression of the fingers. They are then put on the flat roofs of houses, and laid on mats, being now of a yellow colour. In the day time they are covered with rushes or straw, lest they should dry too fast, and too much by the heat of the sun; but at night they are uncovered, and exposed to the air and dew. The dew changes them into deep yellow; they are dried by the moderate heat of the night; and for this reason there are people constantly employed in turning them.

3. USE.

- a.* For dying and painting.
- b.* The young leaves are used as a fallad in Egypt: at Smyrna they powder them, and put them into milk to coagulate it; and in this manner all cheese is made in Egypt.

The seeds are eaten by the Parrot of Alexandria, which is very fond of them; to other birds or beasts they would be a mortal poison.

Culture, &c. of Turkey Saffron.

1. INCREASED.

a. By seed.

b. By off-sets from the roots, which should be transplanted soon after the leaves decay.

2. USE.

a. The root is supposed to be Hermodactyl of the shops.

This is cultivated with us as a flower, which appears after the leaves are gone.

SAGE. (*Salvia Officinalis*.)

1. Common green Sage. *Var.* 1. Wormwood Sage.

2. Red Sage. 3. With a variegated leaf.

2. Balsamic Sage. This is preferred to all the others for making tea. Stalks very hairy and trailing.

3. Sage of Virtue. Leaves narrower than the common, and cut into ear-like appendages at the base. Should be cut for drying when full of young shoots, in the middle of a dry day, and laid in the shade to preserve for use.

Culture, &c.

1. INCREASED.

a. By seed.

b. By slips, suckers, and off-sets, planted early in April, in a shady border, and now and then refreshed with water.

2. PLANT.

a. When the slips, &c. have taken root, they are to be transplanted with balls of earth, into a dry soil, and where they can have the benefit of the sun.

3. USE.

a. For medicinal and culinary purposes.

Some persons eat the fresh leaves with bread and butter.

b. The juice in cheese.

As the wood Sage (*Teucrium Scordonia*) possesses the bitterness, and a good deal of the aroma of Hops, Dr. Withering thinks it would be worth while to try, if it may not be used for the same purpose; it was formerly used in medicine—Will grow in any soil or situation. (See pa. 14.)

SAINTFOIN. (*Hedysarum Onobrychis.*)

Var.—White flowered; Blue flowered; Purple flowered; Striped flowered; and Long-leaved hoary Saintfoin.

The French, to whom we owe our first knowledge of this plant, call it *Sainfoin*—*Sain*, in their language, signifying wholesome, and *foin* hay, because they observe that it agrees exceeding well with all kinds of cattle.

Culture, &c.

1. SOIL.

- a. Grows best on chalky, and dry stone shattery land.
- b. Dryness of more consequence, than richness of the land.
- c. Succeeds most luxuriantly, where there is a hard *substrata*, near the surface, to resist the penetration of the roots; which will otherwise, in better and deeper land, strike to an amazing depth, and exhaust its strength unprofitably beneath the surface.

2. SEED.

- a. The husk should be of a bright colour, the kernel plump, of a grey or bluish colour, without, and if cut across, greenish, and fresh within side.
- b. Sown in March or beginning of April—from one to four bushels per acre.
- c. Answers best in drills 2 feet apart, which saves half the seed, one bushel being required per acre broad-cast, and only half that quantity for the drill.
- d. Sown with barley from one to three bushels per acre; to which is sometimes added 5 lb. of trefoil, which prevents the weeds getting a head till the saintfoin has established its roots.
- e. Sown with clover, with oats, or buck-wheat.
- f. By some sown very shallow; by others 1 inch deep.
- g. The seed is so apt to ferment, and be spoiled, that it is necessary to lay it among clean straw, in layers of straw and seed alternately, which will keep the seed cool, of a good colour, and prevent its fermenting.

3. PLANT.

- a. If the plants have room, a single one will produce half a pound of hay when dry.

- b. Takes more time than any other hay to make.
- c. Rich land produces two crops in a year; but a good crop is not to be expected the first year.

No cattle should feed it the first winter, as their feet injures it—(at this time a top-dressing of soapers' ashes will be of service)—nor should be fed by sheep the second summer, as they bite the crown.

- d. Will last from 10 to 15 years, but at seven or eight requires a dressing of dung, or if sandy, of marle.
- e. If the first season for cutting proves wet, should be left to stand for seed.
- f. Mowed before it is in full blossom is detrimental.
- g. Should be cut for seed when the first bloom is ripe and the last bloom begins to open: and also cut in the morning or evening, when the dews render the stalks tender.
- b. Increase of produce exceeds common grass land, about thirty times.

4. USE.

- a. Increases prodigiously milk in cows, nearly double; the milk is also better, yields more cream than when fed on any other grass; and the butter also better coloured, and flavoured.
- b. Cut before it blooms is an admirable food for horned cattle; and will yield a second crop the same year.
It is a received opinion in Kent, that the aftermath of Saintfoin should be frost-nipped, before any stock be put upon it.
- c. Fattens sheep faster than any other food.
- d. Horses require no oats, though hard worked, while they are fed with it.
- e. A peck of the seed will go as far as a peck and a half of oats with horses.

The author of the *New System of Agriculture* mentions having seen in several parts of Berkshire, Wiltshire, Somersetshire, and many other counties, a bastard sort; much inferior to the true; the seeds of which we receive from France—The French call the bastard sort *Esparcet*.

SALLAD, see Lettuce.

SALT.

1. Rushy and sour land manured with it, prevents the rot in sheep.
2. Dr. Derwin makes the following observation upon salt as a manure—After a time I suspect vegetables will always be liable to disease from this stimulating innutritive material; and that though it may increase the early growth of the plant, it will injure its flowering or seed-bearing; and that hence, if it be used at all, it should be a little before the time that the plant would acquire that part of its growth which is wanted. Thus if the herb or young stem only be wanted, as in spinach, mercury, asparagus, apply salt early; if the flower be wanted, as in brocoli and artichoke, or in tulip or hyacinth, moisten them with a slight solution of salt, when the flower-bud is formed. When the fruit or seed is wanted, as in melons or cucumbers, or peas and beans, apply the solution of salt still later, and at all times with rather a parsimonious hand.

SAVORY.

1. Summer Savory. (*Satureja Hortensis.*)
2. Winter Savory. (*S. Montana.*)

Culture, &c.

1. SOIL.

- a.* The Winter Savory bears severe weather better in a dry lean soil, than in a moist rich one.

2. INCREASED.

- a.* The Summer Savory, by seeds sown early in April.
- b.* The Winter; both by seeds and slips, sown and planted in the spring.

3. PLANT.

- a.* To be thinned or transplanted to 6 inches distance.

4. USE.

- a.* Cultivated both for the kitchen, and medicinal use. (See pa. 14.)

SAVOY. (*Brassica Oleracea sabauda.*)

1. Large green curled Savoy: This is to be preferred for the main crop.

2. Dwarf green Savoy.
3. Yellow curled Savoy.
4. White Savoy.

The Savoy differs from the Cabbage, principally, in having wrinkled leaves.

Culture, &c.

1. SEED.

- a. To be sown from the end of February to early in April, for full sized plants; and in June for Savoy Coleworts.

2. PLANT.

- a. When they have got eight leaves, to be pricked out (in a shady border) about 3 or 4 inches square.
- b. For a full crop to be planted in July in an open situation, and $2\frac{1}{2}$ feet apart—The Savoy Coleworts in September, 1 foot apart.
- c. Where there is no ground vacant, the full crop may be planted between rows of forward beans, early cauliflowers, or such like crops as stand distant in rows, and are soon to come off the ground.
- d. In January or February some of the old plants to be set out for seed, in the manner of cabbages, which see, page 49.

3. USE.

- a. This is one of our most useful winter vegetables; and is esteemed the better for being pinched by the frost.

SCALLION. (*Allium Ascalonicum?*)

Culture, &c.

1. INCREASED.

- a. By parting the roots, either in spring or autumn; the latter season to be preferred.

Should be planted three or four in a hole, at about 6 inches distant, in beds or borders 3 feet wide.

2. USE.

- a. Chiefly used in the spring for green onions.

This sort of Onion being known to few people, the gardeners near London, substitute those Onions which decay and sprout in the house; these they plant in a bed in the spring, which in a short time will grow large

enough for use; when they draw them up, and after pulling off all the outer coat of the root, they tie them up in bunches and sell them in the market for Scallions, though the latter never form any bulbs.

SEASONS.

It is frequently asserted, that the seasons of late years, are considerably altered, and the summers not so warm as they have formerly been—The following observations made at Greenlaw, by Paisley (in 1792), seems to confirm that assertion.

1. Trees and Shrubs that have not outlived the winter, in that neighbourhood, from the year 1777, which they did prior to that, viz.

Tamarisk,	Siliquastrum,
Candle-berry Myrtle,	Lauristinus,
Evergreen Cytisus,	Pyracantha,
Agnus Castus,	Arbutus,
Myrtle-leaved Sumach,	Portugal Laurel,
Venus Sumach,	Phylarea,
Acacia,	Alaternus.

2. The following have not outlived the winter since 1784.

Sweet Bay, Cypress, Rosemary.

3. The following seldom outlive the winter.

Jasmine, Laurel Bay, Ash leaved Maple.

4. The following fruits have not ripened since 1763, in the open air, which they did before that.

Peaches, Nectarines, Apricots.

5. The following have not ripened since 1768.

Walnuts, Figs.

6. Gooseberries and Currants have mostly been destroyed by the Caterpillar since 1784.

7. Oak-horn (Acorns) have seldom ripened since 1784.

The following changes have taken place in the animal kingdom.

1. Bees with difficulty get through the winter.
2. The horse-fly is much more rare than formerly.
3. House-flies are not near so numerous.
4. Bats seldom seen.
5. Swallows not near so numerous.

In the Phil. Transf. Vol. LVIII. p. 58, is a paper by the late Hon. Daines Barrington, wherein it is proved, that countries now more than temperate, were in former ages intensely cold: the change has been imputed by some to the clearing and draining of land.

SEA-WEED, see Kelp.

SEED.

A seed is defined by botanists to be a deciduous part of a plant, containing the rudiments of a new vegetable.

1. The sooner seeds are sown after the ground is ploughed or dug, the quicker it will grow.
2. Depth to be sown.
 - a. Corn, from 2 to 4 inches, deepest in light soils.
 - b. Kidney beans an inch, garden beans $1\frac{1}{2}$, acorns two inches.
 - c. Small seed only on the surface, and raked in.

Evelyn says, seeds cannot be sown too shallow, so they are preserved from birds, for nature never covers them—The following curious passage in *Robinson's Nat. Hist. of Westmoreland and Cumberland*, proves the contrary in respect to acorns; viz. Early in the morning, I observed a great number of Crows (Rooks) very busy at their work, upon a declining ground of a mossy surface; I went out of my way on purpose to view their labour, and I found they were planting a grove of Oaks: The manner of their planting was thus, they first made little holes in the earth with their bills, going about and about, till the hole was deep enough, and then they dropped in the Acorn, and covered it with earth and moss: This young plantation grew in about 25 years, to a thick grove of oaks, fit for use, and of a height for the crows to build in. I told it to the owner of the ground, who observed them spring up, took care to secure their growth and rising. The season was the latter end of autumn, when all seeds are fully ripe.

3. Length of time in the ground.

a. Less than a year—The following garden seeds sown the first of May, came up thus: Cress and mustard in

six days; lettuce, broccoli, turnep, radish, in eight; spinage nine; peas ten; beans fourteen; dwarf kidney beans fifteen; parsley twenty.—Mustard sown the 20th of February was thirteen days in the ground with mild weather.

b. One year—Peach, almond, walnut, chefnut, &c.

Many kinds of seeds that remain a twelve month in the ground, if sown in the spring, as soon as they are ripe, will come up in 6 months.

c. Two years—Hazel, yew, quickset.

Bradley was informed by *Sir Isaac Newton*, that seeds which lie long in the ground, may be forwarded in their germination, by mixing them in a bushel of bran, wet well with rain or pond water; and let remain for ten days without any disturbance in a vessel of wood or stone. About three days after the mixture has been prepared it will begin to heat, and so continue to ferment for thirty or forty days, if it be carefully sprinkled from time to time with warm water, as it begins to dry. The heat of this wet bran will prepare the berries mixed with it, to a vegetable state, in about a week after the ferment has begun, and then they may be sown in the Nursery.

4 Will degenerate if often sown in the same ground they were saved from—The change of seed of vast consequence to the farmer.

5. Altered by plants seeding not far from others near akin to them.

In *Ray's Hist. of Plants*, we have the following anecdote—One *Richard Baal*, a gardener at Brentford, sold a great quantity of cauliflower seed which he raised in his own garden, to several gardeners in the suburbs of London, who carefully sowed the seed in good ground, but they produced nothing but the common long leaved cabbage; for which reason they complained that they were imposed upon, and commenced a suit against the aforesaid *Baal*, in Westminster-hall; the judge's opinion was, that *Baal* must return the gardeners their money, and also make good their loss of time and crops—This cheat we ought not to lay to the poor gardener's charge, for it is wholly to be ascribed to his

good plants being impregnated by the common cabbage: Wherefore, if any one has an excellent sort of cabbage, he ought not to let it flower in the same bed with any other of an inferior sort; least the good sort should be impregnated with the dust of the other, and the seeds produce a degenerate race.

6. How to be preserved.

- a.* The dry kinds are best kept in their pods or covering—Where only one seed is in a husk, it is not necessary to clear the seed before sowing.
- b.* The seeds of soft fruits, as the cucumber, melon, &c. must be cleaned from the pulp and mucilage which surround them, otherwise the rotting of those parts will corrupt the seed.
- c.* The fruit of strawberries, mulberries, &c. may be squeezed together and dried.
- d.* Seeds should be hardened in the air, before they are housed.

7. Duration of seeds.

- a.* Seeds of cucumbers, melons, gourds, &c. which have thick horny coverings, and the oil of the seed of a cold nature; will continue good for ten, fifteen, or even twenty years, unless they are kept in a very warm place, which will exhaust the vegetable nutriment in a twelve month.
- b.* Oily seeds, whose coats, though they are not so hard and close as the former, yet abounding with oil of a warmer nature, will continue good three or four years, as radish, turnep, rape, mustard, &c.
- c.* Seeds of umbelliferous plants, which are for the most part of a warm nature, lose their growing faculty in one or, at most, two years, as parsley, carrots, parsnips, &c.
- d.* Fir seeds kept in the cone, will grow at ten or twelve years; but when they are out of their cones, they seldom grow well after two years, and some sorts after one year.

8. How to be kept in long voyages.

- a.* Packed up in absorbent paper, surrounding the same with raisins, or brown moist sugar; which, by experiment, seems to afford that genial moisture, requisite to preserve the seeds in a state fit for vegetation.

b. Seeds have been brought from distant parts, even from Botany-Bay and Norfolk-Island, in a perfect state of vegetation, which have been merely wrapped in common brown paper: whereas of several kinds of seeds, carried to Otaheite in bottles, sealed with rosin, none grew but mustard seed.

SHEEP.

Arranged according to their *having*, or *wanting* horns.

1. With four horns.

a. On two farms in *Kintyre*, Inverness-shire; two of the horns rise almost perpendicularly, the other two turn in below the ears.

2. With two horns.

a. Norfolk, large horns; black face and legs; of an impatient disposition; good turnep sheep, always feeding quick; mutton very good; fine short wool, average weight per fleece 3 lb. price 1s. 5d. per lb. weight of wethers per quarter 18 lbs. at three and a half years old.

b. Heath, large horns; black face and legs; a wild looking eye, and a short firm carcase; are an active and hardy race, and seem the best adapted of all others, to high exposed heathy districts; coarse long wool, average weight per fleece $3\frac{1}{2}$ lb. price 6d. per lb. weight of wethers per quarter 15 lbs.

c. Dorsetshire, horns round and projecting rather forward; face and legs white; forehead woolly; a compact breed, and lamb early; fine short wool, average of the fleece $3\frac{1}{2}$ lb. price per lb. 1s. 2d.

d. Exmoor, white face and legs; long wool; average weight of the fleece 6 lb. price per lb. 8d. weight of the wethers per quarter 16 lbs. at two and a half years old.

e. Hampshire, mostly white faced, some speckled; excellent for fattening—The South Down have been introduced into this country, and answer extremely well, as three can be kept instead of two of the Hampshire.

f. Welsh mountain S. a long legged, light breed; wool coarse, weighs about 2 lbs. the fleece; mutton excellent—*For*. without horns.

g. Highland S.

(1.) White faced; long legged; weighs about 8 lbs. per quarter; the little wool they carry fine.

(2.) Black faces and legs; body compact, legs short; carcase weighs from 8 lb. to 14 lb. per quarter when fed; the fleece is from 2 lb. to 4 lb. of wool, of a coarse and open texture, and which has more the appearance of hair than wool, and sells only for 6s. or 7s. per stone; probably from the injury it receives by finearing. The lambs are dropped covered with wool, which enables them to withstand the inclemency of the weather.

(3.) A Cross with Bakewell rams produced a dull heavy animal, unable to go to the high ground in quest of food.

It has been found in the Wiltshire horned S. that a cross with hornless tups, have produced an offspring which never have horns.

3. The *Rams only horned*.

a. Spanish, a flock of Marina sheep belonging to His Majesty are kept in Oatland park, the wool of which sold in 1796, for 2s. per lb.—The wool of the Spanish sheep does not degenerate in quality in this country, as has been proved in some kept five years, by Sir Joseph Banks.

(1.) A cross with the Mendip sheep appears to have been a great improvement, not only in the fineness, but in the weight of the wool.

Though the wool of the English sheep is improved by one cross with the Spanish in quality and quantity, no extraordinary improvement takes place till they have at least five-sixths of Spanish blood.

b. Drayton (in Shropshire) S. legs and face black; carcase light; legs rather long; wool fine.

4. *Hornless*, called *Nats*.

a. Tees-water face and legs white; our largest and most prolific sheep have fine bone, and their flesh fine grained; fine, long, bright, soft wool; average weight of fleece 9 lb. price 10d. weight of wethers per quarter, at two years old, 30 lbs.

b. South-Down, grey face and legs; of a quiet, gentle disposition; hardy, enduring wet and cold, and a good turnep sheep, mutton excellent; fine short wool; average weight of the fleece $2\frac{1}{2}$ lb. per lb. 2s. weight of the wether per quarter, at two years old, 18 lbs.

c. Leicestershire.

(1.) Old; white face and legs; of a large, thick, heavy make; long combing wool.

(2.) New; Dishley or Bakewell; a refinement on the old, by crossing with a finer-boned, and finer-wooled ram; remarkable for shape, and for making a more profitable return for what they consume, than other sheep; long wool, average weight of the fleece, at two years old, 8 lb. price per lb. 10d. weight of the wethers per quarter, at two years old. 25 lbs.

d. Lincolnshire; white face and legs; a large breed; famous for a great quantity of long wool, average weight per fleece, at three years old, 11 lb. price per lb. 10d. weight of wether per quarter, at three years old, 25 lbs.

(1.) Crossed with the Nottingham forest S. fleece 8 lb. —The forest alone bears but 5 lb.

(2.) With the Welsh; when fat at 2 years old, weighed 20 lb. per quarter; fleece 6 lb.

(3.) With the Leicester, when fat, at two years old, 24 lb. per quarter; fleece 8 lb.

e. Cheviot: White face and legs; have been introduced with success into Scotland, being suited to a mountainous country, from being bred on a ridge of mountains which runs from N. to S. through Cumberland and Northumberland; fine short wool, the average weight per fleece 3 lb. price per lb. 11d. weight of wethers per quarter, at four and a half years old, 16 lbs.

f. Dartmoor; White face and legs; long wool, average weight per fleece 9 lb. price per lb. 8d. weight of the wethers per quarter, at two and a half years old, 30 lbs.

g. Herefordshire: White face and legs; very fine short wool, average weight per fleece 2 lb. price per lb. 2s. 9d. average weight of wethers per quarter, two and a half years, 3 lbs.

(1.) Improved by a cross of Wiltshire rups.

h. Herdwick: Speckled face and legs; short wool, average weight per fleece 2 lb. at four years and a half

old, price 6d. weight of wethers per quarter at four years and a half old 10 lbs.

i. Dun-faced; dun face and legs; fine short wool, average weight per fleece $1\frac{1}{2}$, price per lb. 3s. average weight of wethers per quarter at four years and a half old 7 lbs.

k. Shetland; Colour of face and legs various; fine cottony wool; average weight of fleece per quarter $1\frac{1}{2}$ lb. price per lb. 3s. weight of wethers, per quarter at four and a half years old 8 lbs.

We meet with the following *observation on wool* in the general view of the Agriculture of the county of Radnor—It is found experimentally, that the same sheep will produce wool of different degrees of fineness on different farms. The wool-buyers here know very well on what farms to look for the finest wool. It is the wool of *particular farms*, more than any *particular breeds of sheep*, that they are anxious to purchase. When a farmer moves and takes his sheep along with him, a change will the first year be visible in the wool. That bank by the side of the river Wye, extending about sixteen miles from the river Edow to Herefordshire, is said to be very congenial to the growth of fine wool. The aspect a S. E. one. The stones of the mountains are of the *filicious genus*; and the prevailing feature of the soil is a red sand, mixed, however, with a notable quantity of clay.

SILK-WORM. (*Phalœna Mori.*)

From the Mulberry-tree flourishing well in Cornwall, and other counties, and bringing its fruit to perfection; the President of the Board of Agriculture, has been induced to recommend the experiment of breeding Silk-Worms.

Not less than 5400 lbs. weight of silk has been raised in one year, in the cold, mostly sandy, territories of Prussia.

KINDS.

1. Common—Brought originally from India.
2. Turin—These have been brought to England, and appear to be a variety quite distinct from the common;

their eggs being smaller, the worms not so large, and have some peculiar marks on them; the cocoons are mostly white, or flesh-coloured, and of different and irregular shapes, some of them almost globular; the thread smaller and more delicate, and more firmly stuck together with the natural gluten, so that it cannot be reeled off, but in very hot water.—One peculiarity attending the Turin worms, is, that they refuse lettuce leaves, and choose rather to die than to taste them.

3. Chinese—These have not as yet been brought to this kingdom, though doubtless the eggs easily might, in a leaden box—They feed upon ash leaves, probably on that kind grown by our nursery-men, and known to them by the title of *Fraxinus Excelsior* *Cor-tice nigricante*. The caterpillars spin a strong grey kind of silk.

METHOD OF BREEDING.

1. At Reggio in Italy.
- a. Houses are erected upon a particular construction for the silk-worms—The windows are long, and not above 6 inches wide; this narrowness prevents too great a quantity of air being admitted at a time; which would overpower the tender insects.
- b. Eggs—when these are on the point of being hatched, the windows are shut, and a moderate fire kept up in the room.
 - (1.) A succession of eggs is imported from Leghorn and other places to renew the breed, and by frequent changes, to keep up the quality of the silk.
- c. Worms, as soon as they come out of the eggs, are placed upon beds of reeds, and fed with the black mulberry, which is said to produce a more compact and heavy silk, than those that live upon the white.
 - (1.) At Reggio they raise but one brood in a year, whereas in Tuscany, though many degrees farther north, they contrive to have two.
2. Observations made by those that have reared them in England.
 - a. Lightning and cold was found to destroy them—This points out the necessity of erecting houses purposely for them, like those in Italy.

(1.) See the VIIth Vol. of the Transactions of the London Society for the Encouragement of Arts; for a figure, and description of an apparatus (invented by the Rev. Mr. Swayne) for rearing silk-worms.

b. As the mulberry tree does not leaf till the latter end of May or beginning of June, it is found necessary to retard the hatching of the eggs till that time, which is found to be practicable; and even to the middle of June.

(1.) The inhabitants of Syria and Phœnice, send the eggs of the silk-worm, as soon as they are laid, to Cannoline, or some other place of Mount Libanus; where they are kept cool, without danger of hatching, till the mulberry buds are ready for them in the spring—The same caution is used in the island of Cyprus, by preserving upon Mount Olympus.

c. From the time of being hatched to the worms spinning, is about six weeks. The four first they have been fed with lettuce leaves; and the silk said to be as good as from those fed only on mulberry leaves; which are, however, their best and proper food.

(1.) Fed upon the black mulberry, produces better silk than when fed upon the white.

(2.) Are fed in Italy, France, and Spain upon the white—If the leaves of the black are given to the worms, after they have eaten some time of the white, they will burst.

(3.) Eat eagerly the leaves of the Elm.

(4.) In Italy, in order to provide food for them in case of a blight among the mulberry trees, other leaves have been tried, and bramble tops have been found the best succedaneum.

d. One-fourth part of the price of the silk is judged enough to defray the whole expense of rearing the worms.

3. SILK.

a. The London Society for the Encouragement of Arts, &c. offered the following premiums for producing silk in England.

1. For the greatest quantity of merchantable silk, not less than 5 lbs. produced in England, the gold medal.

2. For the second greatest quantity, not less than 2 lbs. the silver medal.

(1.) The first premium was gained with the silk obtained from twelve thousand worms, of uncommon size, reared by Mr. Bertezen; some of the cocoons were little inferior in size to a common hen's egg.

(2.) A very good cone of the common sort, will produce 404 yards; and 360 fine cones, an ounce of silk.

b. King James the first was a great encourager of silk-worms; he wrote a letter to the Lord Lieutenants of the several shires in England to encourage the planting of Mulberry-trees, and the breeding of Silk-Worms; and his queen kept silk-worms at the palace at Oatlands, in Surry.

c. Silk raised in England exceeds in quality that of Italy, owing to their being obliged to destroy the chrysalis by heat, to prevent the moth from eating its way through; while in this country, there is sufficient time to wind off the silk without killing the chrysalis.

(1.) The moth does not break the thread; the cones are, however, more difficult to wind, than those wound before the moth has quitted the chrysalis.

d. In the Philosophical Transactions for 1760, p. 21, is a figure and description of a new improved silk-reel: and the London Society abovenentioned, has offered a premium of a gold medal, or thirty guineas, for the best machine, superior to any now in use for carding waste silk, equally well as by hand. Among the presents to the same society, is a small wheel for winding silk from the cocoons, and spinning it at the same time. See Vol. X. of their Transactions.

4. USE.

a. The silk of considerable importance, in many of our manufactures.

b. The silk-worms gut used by Anglers, is obtained, by laying the caterpillars in vinegar a certain time; which makes the intestines elastic and tough.

c. The loose silk, which cannot be stripped from the cones before winding, can be wove into stockings and

gloves—In Persia it is pounded, and spun like cotton yarn.

SKIRRETS. (*Sium Sifarum.*)

Culture, &c.

1. SOIL.

a. Light and moist.

2. INCREASED.

a. By seed sown either in the end of March or early in April; broad-cast, or in drills 1 foot asunder.

b. By slips taken from the roots in spring with a bud to each, and planted in rows 1 foot asunder, and 4 inches distant in the rows.

3. PLANT.

a. Those raised from the broad-cast to be hoed to 2, 3, or 6 inches asunder; those in drills to be thinned to the same distance—The earth between to be hoed three times to destroy the weeds.

The supernumerary plants may be transplanted into another bed, 1 foot apart.

b. The plants raised from seed have the best roots, these begin to be fit for use in autumn, and may be dug up during winter as wanted.

4. USE.

a. The roots are eaten boiled, stewed, or baked, and are esteemed wholesome; but have flatulency; and its sweet taste, exceeding that of the Parsnip, is disagreeable to many palates: are by some eaten raw.

b. The root has been used in medicine.

It is said the Emperor *Tiberius* so valued them, that he accepted them for tribute.

SLOE, or BLACK-THORN. (*Prunus Spinosa.*)

Culture, &c.

1. INCREASED.

a. By sowing the stones of the fruit, either in autumn or winter.

b. By suckers from the root.

2. SHRUB.

a. In gardens are trained as low standards, with from 3 to 5 feet stems, and bushy heads; the roots and stem to be clear of suckers, and shoots.

b. For hedges, full grown shrubs are to be planted on a bank 4 feet high, cutting off the tops to the height of 3 feet—Thus planted the objection to their spreading roots is done away.

3. USE.

- a.* The fruit (which is extremely sour) is used for culinary purposes; and also makes a very grateful and fragrant wine.
- b.* The bark dyes woollens of a red colour; and the juice of it, with vitriol or copperas will make good ink.
- c.* For live and dead hedges—In open fields a slight temporary fence is made, by simply sticking the branches into the ground.

SMALLAGE. (*Apium Graveolens.*)

This plant grows wild in ditches and marshes, but is sometimes cultivated in gardens, when the seed is sown in March.

It is eaten both boiled and raw; and the roots, leaves, and seeds used in medicine. Cellery is only this plant improved by cultivation.

In a wild state Smallage is acrid, nauseous, and hurtful; being made mild, and esculent, only by culture, in a drier soil.

SOIL.

By Soil is understood that part of the land which is the basis of vegetation, and as such, the object of cultivation.

- 1. Timber trees grow faster in a wet soil than in a dry; but then the wood is softer and of less value.
- 2. Fruits growing in moist and shady places are harsh and crude; but in dry warm soils, exposed to the sun, are sweet and agreeable to the taste.
- 3. A dry soil renders plants more aromatic; a moist soil more insipid; and a watery soil generally corrosive.
- 4. A poor soil requires more corn seed than a rich one; as the plants do not tiller so much, i. e. produce so many stalks, and consequently do not require so much room.

" SOILING.

" Feeding live stock, kept' up, with *cut green-food*; deserves every thought and attention, till its advantages are experienced and well *understood in practice*—so promising it is !"

SPINAGE.

1. *Spring S.* (*Spinacia Glabra*, Miller). Leaves *oval*; seeds smooth.

Culture produces several varieties; as with leaves remarkably broad and thick; which is called Plantain Spinage, &c.

2. *Winter S.* (*S. Oleracea*). Leaves *triangular*; seeds prickly.

3. *French S.* Leaves of the shape of the winter S. but the angles more rounded; seeds round and flat; grows 6 or 7 feet high.

4. *Mountain S.*

Culture, &c. of Spring Spinage.

1. SEED.

- a. Sown either broad-cast, or in drills a foot asunder, and an inch deep.
- b. Sown on warm dry borders in January and February; and from thence in more open ground till the beginning of August; as the season grows warmer, should be sown as often as every fortnight or three weeks, and in a moist soil.
- c. Sown with radishes, and also between potatoes, cabbages, beans, &c.

2. PLANT.

- a. The broad-cast to be hoed to 3 or 4 inches asunder, and as they increase in size, to be cut up for the table to 8 or 10 inches.
- b. Some plants raised from the February sowing to be left for seed.

When left for seed, some gardeners ignorantly pull up all the male plants (or she plants as they call them), which makes the seed not fruitful; a few left rightly situated, will be sufficient, to impregnate a great number of plants.

Culture, &c. of Winter Spinage.

1. SEED.

- a.* Sown the end of August, and in September.
- b.* Sown broad-cast either alone; or between cabbages, &c.

2. PLANT.

- a.* To be hoed in dry weather to 3 or 4 inches apart, and kept well weeded.

3. USE.

- a.* Both the spring and winter spinage is generally eaten boiled; but sometimes fresh in fallads.

Till spinage begins to run to seed it is most advantageous to gather only the outer leaves.

Culture, &c. of French Spinage.

1. SEED.

- a.* Sown early in April either broad-cast or in rows 1 foot apart.
- b.* If the seeds fall when ripe, plants will come up the following spring.

2. USE.

- a.* Equally good for the table as the common Spinage.

SPRUCE, see Fir.

STEEPS FOR WHEAT.

Steeps are used to render the seed more fruitful, as preservations against distempers in corn, and to prevent the worm from eating it.

1. Steeped in chamber-ley, and powdered with quick-lime; the smut is seldom or never seen, where this practice is followed.
2. Take twenty-eight gallons of water, boil in it 1lb. of arsenick, then mix all together, and steep your wheat in it for six or eight hours; when taken out, mix well with fresh lime as usual. The wheat should be put through a riddle, and what swims at top skimmed off.

This receipt wholly prevented the smut, where, before the use of it, the wheat was very subject to it.

3. A handful of salt to twelve Scotch pints of chamber-ley—It is usual to lay the grain on the barn floor and throw the pickle upon it; whilst in the mean time, a person is employed in turning it over several times with a shovel, till the whole is wet, when a quantity of newly slacked lime is sprinkled upon it, through a sieve; the wheat is in the mean time turned over and over, until every grain has got a thin covering of lime; this operation is done immediately before the seed is sown, for if the grain thus treated stands over night, there is danger that the limy incrustation will injure it much.

Tull relates that a ship load of wheat was sunk near Bristol, in autumn, and afterwards, at ebbs, all taken up after it had been soaked in sea water; but being unfit for the miller, the whole cargo was bought up by farmers, and sown in different places. At the following harvest, all the wheat in England happened to be smutty, except the produce of this brined seed, and that was all clear from smuttiness. This accident has justified the practice of brining ever since, in most parts of England.

STRAW. See Chaff.

STRAWBERRY.

1. Wood S. (*Fragaria Vesca*.)
 - a. With red fruit.
 - b. With white fruit, ripens later than the former.
 - c. With green fruit, having a faint shade of red when ripe; called by some the Pine Apple S. from its rich flavour.

(1.) Miller mentions a variety raised from the seed of the last, which continued to produce fruit from the first season for S. till prevented by frost.
2. Scarlet S. The fruit is by many of good taste preferred to all other sorts—Grows naturally in woods and fields in America.
3. Hautboy S. Fruit as large as a small plum.

This is a *dioica* plant, and unless planted judiciously, with a few males interspersed amongst the fe-

males (both easily distinguished) there will be no fruit; by neglect of this, the males being the strongest plants, and shooting out the most vigorous runners, will in a few years overpower the females; gardeners then call them barren, but do not know why, and root out all the males, which does not, however, mend the matter.

4. Chili S. Fruit large, firm, and well flavoured; leaves hairy and fleshy.

5. Alpine.

6. One-leaved S. (*F. Monophylla*). This was raised at Versailles from a seed of the Wood S.—Not much known in England, though a good sort.

7. Large leaved S.—This was brought into England by J. Tradescant from Brussels, but in the course of seven years he never saw one berry completely ripe. Perhaps they were like the Hautboy of the Dioecia class, and he had only female plants.

Culture, &c.

1. SOIL.

a. A moist hazelly loam.

b. The Chili a strong brick land, approaching to clay.

c. The ground laid out in beds 4 feet broad, with paths 2 feet or $2\frac{1}{2}$ feet between.

2. INCREASED.

a. by seed.

b. By runners.

3. PLANT.

a. Distance of the plants.

(1) Wood S. rows 1 foot apart, the plants 6 inches, planted in a quincunx manner.

(2.) Scarlets and Hautboys 15 inches both ways.

(3.) Chili 2 feet both ways.

b. Should be kept free from strings and runners.

c. For forcing; plants from one to three years old should be taken up in September, October, or November, with a ball of earth, and planted in pots; which are to be placed in hot-beds or forcing houses at about two or three weeks interval, from December till the end of April, to produce a succession of crops; the earliest will be in March.

4. USE.

a. The fruit.

SWINE.

1. Cathnefs S. A small fierce race, with long pricked ears, high backs, long bristles, and slender noses —The country being open are tethered in the fields.
2. Common lopped-eared S. The best breed in Berkshire, Wiltshire, and Hampshire; in the last county being principally fed upon acorns, and beech mast; the bacon of them is reckoned superior to most others in the kingdom.
3. Black African, or Negro S. Colour black, body nearly naked of hair or bristles.
4. Chinese S. Pointed erect ears; belly hanging almost to the ground; legs short.

Fatten readily; but have generally thick hides; do not bear the cold well, and from their tenderness; are apt to hide in stable dung, and get the mange.

5. German S. A breed of this kind has been introduced in the county of Durham: they are of a round form, and pleasing appearance, spotted black, red, and white; but by experience they have been found unprofitable, because they require a greater proportion of food, than our old breed, to fatten them; and when fat, are deficient in the weight that might have been expected from their bulk.

6. Cross breeds.

- a. The lopped-eared crossed either by the African or Chinese; have produced an improved breed.
- b. Two gentlemen in Lancashire have a breed between the Wild Boar and the Chinese; they have very light and small bellies; their sizes are but small, weighing from ten to fifteen score, generally twelve score.

There is an animal kept tame in some of the East India islands, called *Baby-rouffa*, of the same genus as the common swine; which, if it would bear our climate, would be an useful animal, as it lives solely on herbs and leaves of trees, and never ravages gardens like swine; the flesh is well tasted.

Swine are ready for procreation at seven months old; but the male is unprofitable for that use, until twelve, and is in his prime at two years. The sow goes nominally four months, or one hundred and fifteen days, with very few days variation; bringing three litters, of from five to twelve pigs each litter, in about eighteen months, supposing the pigs to be weaned; but in two or three months, less time, the pigs being suckled for roasters. The old lopped eared make the best bacon; the Chinese and crosses with it the best pork; for which they will fatten in four or six weeks; and killed at eight or ten months old, are esteemed more delicate, than if they were kept longer in the sty. Should be restrained to a certain quantity of water, and kept clean and dry; for cleanliness is as essential to the preservation of their health and well doing, as that of any other animal.

The cutting away with a sharp knife, the gristley or horney part of the snout, through which the ring is usually put; will without the least injury arising from it to the animal, effectually prevent its rooting.

SYCAMORE. (*Acer Pseudoplatanus*.)

Culture, &c.

1. SOIL

a. Will thrive in almost any soil, but chiefly delights in a dry and light earth.

2. INCREASED.

a. From keys, or seeds sown in the spring.

3. TREE.

a. Bears transplantation very well in the spring, and of any size.

b. Is extremely useful to make plantations near the sea, being a tree which no storm or wind can hurt.

c. The wood is soft, white, tough, and light, and is held little inferior to ash.

4. USE.

a. The wood is of great use for ploughs, carts, &c. and for all manner of turnery wares.

b. By tapping in the spring, it discharges a considerable quantity of a sweetish watery liquor, which is used in

making wine; and if inspissated, it affords a fine white sugar.

" TARES.

" This with other of the pea-kind, is very desirable in the husbandry of *America*. Let it not pass year after year unnoticed by the industrious, improving, American husbandman." (See Vetch.)

TEASEL. (*Dipsacus Fullonum*.)

Culture, &c.

1. SOIL.

- a.* A strong rich clay, or what is generally denominated good wheat land.
- b.* It is observed that in a luxuriant soil, the heads have fewer hooks in the same space, than when they grow in a poorer soil.

2. SEED.

- a.* Sown in April—two pecks per acre.
- b.* Sown with Coriander and Carraway. See Coriander.

3. PLANT.

- a.* Must be kept clean of weeds.

Long narrow spades are used for this purpose in Somersetshire.

- b.* In November, if the plants are too thick, they are to be drawn out to fill up vacancies; and the plants are to be set at a foot distance.

If after this thinning too many plants remain, another field must be prepared, into which they are to be transplanted; but those plants which are never moved, produce the best heads. The second year the plants are to be earthed up.

- c.* In July the uppermost heads begin to blossom, and as soon as the blossom falls they are ripe; when they are to be cut off with a knife; after a fortnight the ground is to be gone over again, and at a third cutting the business is completed.

On the day of cutting they are to be carried into a house; and if the air is clear they are to be taken out daily and exposed to the sun, till they are completely

dry ; great care must be taken that no rain falls on them.

4. USE.

2. The clothiers employ the crooked awns of the heads to raise the knap upon the woollen cloths. For this purpose they are fixed round the circumference of a large broad wheel, which is made to turn round, and the cloth is held against them.

TEREBRATION

Or boring of trees ; is a kind of grafting used by the Ancients, and consisted in piercing through the bark, and then pressing the instrument downwards between the wood and the bark, to make room enough to receive the foot of the Cion 2 or 3 inches ; by which way the Cion was fed, and struck root in the tree ; the foot or bottom part of the Cion was pruned a little, so as to make it terminate in a point, and when it was fixed, the orifice was closed with grafting wax.—*Bradley*, who tried it in England, found it would succeed best when the bark would slip easily ; he found it of great use, especially in difficult cases.

THRESHING MACHINES.

1. *A portable one* by Turbat and Tunstal : With this a man and a boy are capable of threshing fifty bushels per day ; the expenses no more than two pence per bushel, and the saving one bushel in ten.
2. *Winlaw's* : Allowing that a man will thresh six bushels in a day of eight hours work, this machine will clear that quantity in twenty-four minutes ; and to an incomparable greater degree of perfection, than can possibly be done by the flail ; the straw is also preserved unbroken, the ears being first cut off ; it is worked by hand.
3. *Maikle's* : Under favourable circumstances, will thresh and clean from forty to sixty bushels of wheat in one hour ; leaving no corn in the straw ; this is constructed on the principle of the flax mill.

Some of the threshing machines have a winnowing machine under them, and will thresh and winnow

twenty-four bushels of wheat in an hour; but the quantity threshed in a given time depends on the quality of the corn, and the length of the straw; the number of hands required are, a woman to feed the machine, another to hand the sheaves to the feeder, and a third to receive and riddle the dressed corn.

Threshing, winnowing, and grinding machines, have been fixed one over the other in lofts, and worked by the same machinery.

THERMOMETER.

It has its uses respecting *drought* and *moisture*, as well as of *heat* and *cold*. Farenheit's is preferred.

THYME.

1. Garden Thyme (*Thymus Vulgaris*.)
2. Common Thyme (*T. Serpyllum*.)
- a. Lemon Thyme. This must be propagated by cuttings or slips, as plants raised from seed, have not the same agreeable odour.

Culture, &c. of Garden Thyme.

1. SOIL.

- a. On dry, poor, stony land, it will endure the greatest cold of this country; but in rich ground is sometimes destroyed.

2. INCREASED.

- a. By seed sown in the spring, neither deep nor thick.
- b. By parting the roots in March or October.

3. PLANT.

- a. The plants from seed to be thinned, in June, to 6 inches asunder—Plants, from parting the root, to be planted 8 inches distance.
- b. To be watered in dry weather, and kept weeded.

4. USE.

- a. Is cultivated for the kitchen, and also for medicine.

The common Thyme is put to the same uses, and cultivated in the same manner as the garden Thyme—An opinion prevails, that it gives a superior flavour to the flesh of sheep; but this appears to be a vulgar error, as they scarce ever eat it.

TIMBER.

1. State and condition of several kinds after being exposed to the weather ten years.

- a. Cedar, perfectly sound.
- b. Larch, heart sound, but the sap quite decayed.
- c. Spruce-Fir, sound.
- d. Silver-Fir, in decay.
- e. Scotch-Fir, much decayed.
- f. Pineaster, quite rotten.
- g. Chesnut, perfectly sound.
- h. White Poplar, sound.
- i. Beech, sound.
- k. Walnut, in decay.
- l. Birch, quite rotten.

2. Green fir-timber may be *seasoned* and rendered fit for immediate use, by *seaking* the planks or round trees, barked, a few days in lime water; or paying them over with lime along with water—*Limewater* is made by slacking the lime in water, and the hotter it is used after the lime is slacked, the better. "The American Poplar may be seasoned by fire, immediately as felled, see Essays on Husbandry, &c."

3. Dry-Rot in timber may be prevented by charring the ends of the joints, and fixing them in anchor-smiths or foundry ashes laid under the flooring. Leaving one of the boards of the floor loose, and removing it at night, is said to prevent it.

The Dry-Rot is owing to a yellow Fungi, and to a white mould spread by a plant, resembling a vine or sea weed. (*Clavaria Hypoxylon?*)

4. Composition for preserving weather boarding; which is impenetrable to water, and is not injured by the action of the weather, or heat of the sun, which hardens it.

Three parts air-slacked lime, two of wood ashes, and one of fine sand, or sea-coal ashes; sift these through a fine sieve, and add as much linseed oil as will bring it to a consistence for working with a painter's brush; great care must be taken to mix it perfectly—(it is thought grinding would be an improve-

ment)—two coats are necessary ; the first rather thin, the second as thick as can conveniently be worked.

5. Painting wood before the sap is dry, hastens its decay.

TOBACCO. (*Nicotiana Rustica.*)

Culture, &c.

1. SOIL.

- a.* Requires a rich forcing soil, and exhausts the land.

In America Tobacco is reckoned better in northern than in southern climates ; a pound raised in New England is supposed to contain as much strength as 2 lbs. from Virginia.

2. SEED.

- a.* Should be sown on a seed-bed, as soon as the weather becomes warm enough to make it vegetate.

3. PLANT.

- a.* When the seedling plants are strong enough to bear removing, they are to be transplanted to the patch on which they are intended to stand.

- b.* Planted in the *quincunx* manner, 1 foot asunder ; or in rows, 2 feet apart, and 1 foot asunder in the rows.

- c.* To be carefully hoed, and kept free from weeds during the summer.

- d.* In autumn, when the flowers begin to drop off, they are to be cut and dried in the shade.

- e.* When dry, the leaves are to be picked off, and pressed down close in casks or other vessels.

4. USE.

- a.* The law does not allow Tobacco to be cultivated for the pipe and pouch ; and only half a rod for the purposes of physic and chirurgery.

A few years ago some people in Yorkshire not only cured it properly, but gave it the proper cut ; their tobacco was, however, seized, and publicly burnt, and themselves severely fined and imprisoned.

- b.* In America Tobacco is reckoned as good, if not superior to oak bark, for tanning.

- c.* Shepherds cure the scab in sheep with an infusion of it.

" TOP-DRESSING AND GREEN-DRESSING.

" Are valuable methods of manuring the ground for plants."

TREE.

A tree differs from a Shrub or Plant in rising to a very great height, with a simple, woody, and durable stem, or trunk.

1. It has been observed that foreign trees grow in a greater variety of soils, and situations, than native trees; each of which has generally a soil and exposure peculiar to it.
2. *Transplanted* oak and perhaps some other trees, thrive faster, and produce better timber in the same time, than those which have never been moved.

A cart has been invented for taking up trees with a ball of earth, and carrying them to new pits.

3. If the tap root of the oak (and probably of some other trees) is cut off, two or three tap roots will generally be formed in its stead, which affords them a better opportunity of finding out the good earth, and in case one of them should be stopped by a stone or otherwise, the others may be more fortunate, which is not the case with a single tap root, and probably this may account for the superiority of transplanted trees.

To plant tap-rooted trees without injuring them, holes have been bored with an iron instrument, used for fixing hop-poles with.

4. Trees should be *planted as they stood* before, i. e. the side which formerly faced the south to be placed again in the same direction; as a guide the bark should be marked before the tree is moved.

It is to be remarked, that trees put out the longest and strongest root towards the S. W. in order to support them against the most frequent attack of a S. W. wind; so that, when a N. E. storm happens, triple the number of trees are blown down, which fall under as great blasts from the opposite quarter.

5. When a young tree makes two or three shoots from the root they should all be preserved and encouraged,

as each will attain to nearly the size of single-trunked trees that grow near them.

6. The ages of the pine, cedar, apple-tree, pear-tree, &c. may be known while growing, by their annual boughs or branches; and all trees when felled, by the number of the internal concentric circles or rofing rings.
7. It is an infallible *sign of hollownefs*, when there is a swelling vein, which evidently discovers itself above the rest of the trunk, although invested with bark, and which frequently circles the tree like ivy.

As the woodpecker has not power to penetrate a found tree; their perforation of any tree is a warning to the owner to throw it down.

TULIP TREE. (*Tulipifera Liriodendron*.)

Culture, &c.

1. SOIL.

- a. A light loamy foil, not too dry.

2. INCREASED.

- a. By feed.
- b. By layers: They are commonly two or three years before they take root, and they seldom grow to straight trees, though they produce flowers sooner than those raised from seed, which is always the case with stunted plants.

3. TREE.

- a. Seedlings require protection, especially from autumn frosts.
- b. Should be planted where they are to remain, at two years old.
- c. Grows best in woods.
- d. Has grown in England to $4\frac{1}{4}$ feet in girth, and 77 feet high.

Is a native of N. America where it grows to 10 feet diameter. " There called the Poplar."

4. USE.

- a. The wood makes handsome wainscot, tables, shingles for houses, and planks for various purposes.

b. Cattle are fond of its buds, which gives a very odd taste to the milk.

"Its blossoms abound in honey, and in the season bees, &c. among the branches, seem to give vociferous life to the trees, with their buzz."

TURNEP. (*Brassica Rapa.*)

FIELD TURNEPS.

1. *Oval White.*
2. *Large green-topped*; attains to a large size, is soft and sweet, but growing much above ground is in danger of sustaining injury from severe frosts.
3. *Red or Purple-topped*; has a large root, grows hard; and stringy sooner than the former. This is a *hardy sort*, the roots being more than half covered by the soil, and continues good till the beginning of April.

The above are Norfolk Turneps.

4. *Tankard*; this is *proof against severe frost*.
5. *Yellow Turnep*; this is cultivated principally in Scotland, North Wales, and Ireland; is supposed to contain more nutriment than the white, and lasts longer in the spring without being sticky.
6. *Swedish Turnep* or Ruta-Baga.

As the Swedish Turnep, when suffered to seed near the Norfolk white, produces many varieties, it has been supposed, that a sort might be obtained by a due admixture, which shall receive from one a degree of solidity sufficient to enable it to bear our winter; and from the other, an enlargement of size, and, perhaps, a quickness of growth, which at present is apparently wanted.

Culture, &c. of the Common Turnep.

1. SOIL.

- a. Turneps delight in a *light soil*, consisting of sand and loam mixed.

2. SEED.

- a. From one to two quarts, sown broad cast.

New seed will come up three days sooner than old—should be frequently changed.

- b. Sown *between spring wheat*, drilled at 2 feet—The wheat was a very good crop; the turneps were thinned

with the hand-hoe, and after harvest the weeds were cut up round the turneps with the hand-hoe, and they grew very large and vigorous.

(1.) Sown *between peas*.

- c. In drills 3 feet asunder; at the second hoeing left *one foot apart*; the intervals may easily be cleared of weeds by the horse-hoe.
- d. Sown *in drills, between double rows of beans*, about *one foot asunder*, with alleys more than 2 feet wide between the double rows of beans.
- e. Drills made by a light plough 18 inches asunder, and the seed rilled by girls out of half pint phials; either with the mouth open, or what seems better, through a quill inserted through the cork of the phial.
- f. Sown *broad cast, between beans* planted in rills, 2 feet apart; the beans horse-hoed and the turneps sown either at the second or third hoeing.

Turneps sown between beans are not attacked by the fly.

- g. Sown the latter end of July or beginning of August.

3. PLANT.

- a. Plants from the broad-cast, *hoed* two or three times with a 7 or 9 inch hoe, and the plants left *one foot apart*.
- b. A *light harrow* run over the field within three days of hoeing, in a direction contrary to that of sowing.
- c. *Hoed, when they have got five leaves, to six inches apart*; and a month afterwards (or earlier if a wet season) *hoed to at least fourteen inches* from each other.

Figure 1, in the plate, represents a turnep *transplanter* used to fill up spots in fields where they have failed. The method of using it is, to hold the long handle with the left hand, and the short handle with the right drawn up; put the instrument over the plant that is to be taken up, and with your feet force it into the ground; then give it a twist round, and by drawing it gently up, the earth will adhere to the roots of the plant in a solid body; then with another instrument of the same size, take the earth out where the plant is to be put, and bringing the instrument with the plant in it, put it into the hole which has been made with the other;

then keep your right hand steady, and draw up your left, and the earth and plant will be left in the hole with the root undisturbed. " This is a useful *Transplanter* of many delicate kinds of plants—*melons, Lima beans, &c.*"

d. Turneps of the *best form* are to be *selected for seed*, and *transplanted* in the month of October, November, or December, into a piece of ground properly prepared for them; in July or August following it is generally reaped, tied up in sheaves, and when dry put into a long stack, where it is kept through the winter; and threshed out in April or May—*Seed raised without transplanting* sells for one-half or one-third the price of transplanted seed.

The seed should be gathered when the sun shines, and is frequently like Rape, threshed abroad.

e. To *preserve turneps from the frost*.

(1.) After drawing them in February, cut off the tops and tap-roots, (which may be given to sheep) and let them lay a few days in the field, as no weather will hurt them; then on a layer of straw next the ground place a layer of turneps, 2 feet thick; and then another layer of straw, and so on alternately, till you have brought the heap to a point. Care must be taken to turn up the edges of the layers of straw to prevent the turneps from rolling out; cover the top well with straw and it will serve as a thatch for the whole; a load of straw is sufficient to preserve forty tons of turneps. Kept in this manner they will be nearly as good in May as when first drawn from the field;—or cut off the tops and roots, and pile the turneps in heaps of about twelve cart loads each, in form of the cone of a wheat rick, then cover a foot thick with straw and thatch. " Yet, in *America* they cannot stand, *in the ground*, through winter."

(2.) When drilled; pull up every other row for food, leaving vacant spaces about 3 feet wide, and with a plough mould up the turneps on each side. " The *double-mould board* plow excels in this; in dispatch as well as in perfection of its work."

This lessens very materially, if not absolutely pre-

vents, the danger arising from the frequently fatal effects of a *cutting frost*.

These serve as a resource in time of frost and snow.

4. METHOD OF PRESERVING TURNEPS FROM THE FLY, SLUG, CATERPILLER, WORM, &c.

a. *For the Fly.* (Aphis.)

(1.) To a quart of turnep-feed add one ounce of brimstone finely powdered, putting both in a bottle, large enough to afford room to shake them well together every day for four or five days previous to sowing;—keep the bottle well corked.

(2.) Strew foot on the land when the plants are just come up.

(3.) Elder boughs, fixed in a harrow, and drawn over the land as soon as the seed is sown or the plants come up. Some bruise the boughs and fumigate them with burnt tobacco, mixed with a small quantity of assafoetida.

(4.) Want of moisture, and not the fly, has been stated to be the general cause of the failure of the turnep crops, and therefore the putting of the seed deeper into the ground than is commonly practised, has been recommended.

(5.) The early sown escapes the fly; it is said to be also in some cases avoided by sowing the seeds of two different years.

b. *For the Slug, (Limax Agrestis);* rolling the ground *at night* is recommended; and sowing *lime* with the seed.

c. *For the worm which feeds upon the root,* nothing has been devised. Though they are probably destroyed by manuring with soapers' ashes, which is said to preserve the plants; "or with lime."

d. *Black Canker.* Some people draw a rope over the ridges, two persons holding the opposite ends; this will brush them off. Ducks will also clear them. This insect is described as a caterpillar, as black as foot, and at full growth about $\frac{3}{4}$ of an inch in length. Turneps are infested by two other insects, a yellow Tenthedro Fly and a Beetle (*Chrysolomela Nemorum*.)

e. *The Hanbury.* This is a small worm in the knobs

on the turnep roots, and eats into their hearts; it is most common in a dry season, and a sandy soil.

5. USE.

a. For *feeding horses*: These when fed upon turneps are induced to eat the barn chaff, and other dry food with a good appetite; are kept healthy, and will work without corn.

b. For *feeding cattle and sheep*.

(1.) Fed first with beast, then with wethers, and lastly with lambs.

(2.) Carried off the field and given in houses, farm yards, in a grass field or unploughed stubble.

The mutton of sheep fed with turneps is not ill-tasted.

c. For *feeding cows*. *To make sweet and well tasted butter* from the milk of cows fed upon turneps;—Let the bowls, either of wood or lead, be kept constantly clean, and well scalded with boiling water before using. When the milk is brought into the dairy, to every eight quarts mix one quart of boiling water; then put up the milk into the bowl to stand for cream. Turneps will not give a bad taste to butter if the green tops are carefully cut off before they are given to the Cows.

d. One bushel of seed returns two gallons of oil, by expression; which is used in the wool business, or for burning in lamps.

In China, an oil for common purposes is drawn from the seed.

Culture, &c. of the Swedish Turnep,— or *Rosa-baga*.“

1. The inside white.

2. The inside yellow; a better sort than the white.

1. SEED.

a. Sown from the 15th of May till the 10th of June.

b. 2 lb. sown per acre.

c. Drilled 3 feet; and the plants laid out like the common turnep.

2. PLANT.

a. Hoed 9 inches asunder.

b. Is *hardier than the common turnep*, standing the severest winter without injury, either when left in the ground, or stacked. “It has stood the winters of Pennsylvania, without failure.”

c. The roots have grown to the weight of 16 lbs.

3. USE.

a. *As food for draft horses* instead of corn.

The turneps are to be put into a barrel or tub and cut small with an instrument like a hoe, with the blade put perpendicularly on to the shaft. A man will cut as much in one hour as six horses can eat in 24. The tops and bottoms are to be previously cut off and given to the pigs.

b. Makes the coat of horses fine, and cures the grease.

c. Sheep prefer them to the common turnep.

d. Eaten by cows and oxen as readily as the common turnep.

e. Preferred to the common turnep for the table.

This plant has been supposed to be a variety of the rape, rather than of the turnep.

GARDEN TURNEPS.

1. Early white Dutch—The best sort for gardens, particularly for the early crop.

2. Common large white—Very proper for gardens.

3. Yellow—Very good.

4. Long-rooted.

5. Small round French—If not used young, they become rank and stringy.

6. Small round red—For curiosity and for eating.

Culture, &c.

1. SOIL.

a. A light, sandy, loamy soil, which should not be too rich.

b. A moist soil in summer.

c. Are always sweetest in fresh land.

2. SEED.

a. Two or three ounces will sow 15 or 16 rods or poles of ground.

b. Only small quantities to be sown in February, as they soon run up to seed.

c. Full crops from the middle of March to the end of May—In the last month should not be sown in dry weather.

d. Between the 10th and 25th of June for an autumn crop; and

c. In July for a crop to last from Michaelmas to Christmas.

3. PLANT.

a. The young plants to be hoed, when they have rough leaves an inch broad, to the distance of 7 or 8 inches—This should be performed in dry weather.

b. It has been observed that transplanted turneps grow larger than those that have not been moved.

4. USE.

a. For the table.

b. As a substitute for bread; this was the case in 1693, when the dearness of all sorts of corn, occasioned many poor people in Essex, to make bread of them; they took the peeled roots, and boiled them in water until they were soft, then strongly pressing out their juices, they mixed them with their weight of wheat-meal; and adding salt, yeast, and warm water, they kneaded it up as other paste, which having lain a little while to ferment, they ordered and baked it as common bread.

" In *America*, attention is wanted to this so very important an article of *food to live-stock*,—The great support of the *productive powers of the soil!*"

VALERIAN. (*Valeriana Phu.*)

Culture, &c.

1. PLANT.

a. It is propagated by parting of the roots, either in the spring or autumn (but the latter is much preferable,) and planting them 2 feet asunder, keeping them clear of weeds.

2. USE.

a. It is cultivated for medicinal use, and is called in the shops by the name of *Phu*; the root is the part used, which should be taken up and dried, when the leaves decay in autumn.

We have a native Valerian (*V. Officinalis*), the root of which is used medicinally, and is sometimes cultivated in the same manner as the above, but it possesses most virtue in a wild state.

VERMIN.

1. WEASELS, STOTES, AND POLECATS.

- a.* Great numbers have been taken in a trap of the following construction—It consists of a wooden box, or hutch, resembling the dog kennel, which is usually provided for a yard dog; its form being that of a barn. It is divided in the middle by an open wire partition running from end to end, and reaching from the edge of the roof to the floor; one side of this partition is again divided into two parts, or cages; one of them for a tame rabbit, the other for a live fowl, to allure the vermin; the other half of the hutch being formed into a falling box to take them.

This trap is to be placed in coppices and hedge-rows.

2. MOLES.

- a.* Destroyed by several townships associating together, and engaging a mole-catcher, at the rate of four-pence per acre, for a term of seven years.

This agreement, towards a total extirpation, must be more efficacious, than the greatest exertions of individuals.

3. RATS.

- a.* May be destroyed by collecting them with paste made with wheat flour and sugar, scented with the oil of caraway, and formed into a paste with water; they are to be fed with bits or pieces, at stated times, till they are all collected; when either a falling trap, or which requires much less time and attention, a sufficient quantity of *arsenic** is added to the paste, to operate as a poison—This is to be done in summer, when the barns are empty; and care must be taken that the arsenic is not the least gritty; the scent of the oil is to be communicated by rubbing it into the palms of the hands, and then rubbing the flour between them.
- b.* If the expressed juice of the stalks or leaves of the Deadly Nightshade, is made into a soft paste with oatmeal or wheat flour, and placed in the holes or tracks which rats frequent, though they will not eat it, yet it is so disagreeable to them that they will instantly leave the premises.

* "Beware of *Arsenic*."

c. About a halfpenny has been the assessed rate for destroying them.

From the calculations laid before the public by Sir James Wright it appears too evident, that the damage done by these wide-wasting devourers of corn, amounts to no less than 16,850,000 bushels annually, which is far more than sufficient for seed to sow a year's crop! and Dr. Arthur Young affirms, that a full fourth of the grain raised in Great Britain is destroyed by vermin; but particularly by rats: They also destroy great numbers of young ducks, and chickens.

Merchant ships sometimes bring home in them the Musk Rat; and oftener from St. Helena, a large flat headed Rat, called a Bandicote.

4. MICE.

a. Destroyed with traps; those in barns to be baited with leather, grease, or other animal food; and with cheese in chambers with corn.

b. To prevent their burrowing under barn-floors, they are laid on flints or broken cinders; or what is still better, on piers of brick, 15 or 18 inches high, to permit dogs or cats to pass under.

c. Hucksters place the boughs of Knee Holly (*Ruscus Aculeatus*) round bacon and cheese, to defend them from Mice, for they cannot make their way through the prickly leaves.

d. The encouragement of the *barn Owl* is probably the only method that can be devised for destroying of field-mice, as that bird beats the fields as regularly as a spaniel, in quest of them; and requires for the rearing of one brood of its young, many hundreds of mice.

5. CROWS.

a. Their number greatly lessened by a collection of sixpence a plough, made by a few farmers, for pulling down their nests.

"Crows are terrible destroyers of Indian corn. Black-birds and squirrels are also great enemies to the corn crop; but the poor *Wood-peckers*, accused of eating maize in the field, do but dig for and pick out *Worms*; for which they deserve a premium, as these worms, in different shapes and characters, become enemies to vegetable productions."

6. SPARROWS.

a. For these a successful trap is made, on the principle of a fish pot; it is made of brown unpeeled oziens, the diameter about 2 feet; the depth 9 inches; the top is somewhat dished, with a tunnel or inverted cone in the centre, reaching to within about an inch of the bottom of the basket; the aperture, or entrance, formed by the points of the twigs of which the tunnel is constructed, being about $1\frac{1}{2}$ inch in diameter; the best bait, wheat scattered in the basket.

Succeeds best during the breeding season.

7. COCK-CHAFER GRUB—which destroys the roots of Corn, Peas, Beans, and Turneps.

a. Land very much infested with them, has been freed by manuring with moory soil.

b. Encouraging the breed of Rooks is recommended.

c. A partial relief has been obtained by persons following, and picking them up as the ground is ploughed.

d. Destroyed by irrigation.

8. THE KEEPING OF A HEDGE-HOG (it is said) will free kitchens from *beetles*, *rats*, and *mice*; this is supposed to be effected by the scent of the hedge-hog being obnoxious to them; for he will feed only on apples, or bread soaked in milk.

9. *Crickets* are easily destroyed by making a paste of powdered arsenic, wheat meal, and scraped carrots; which must be placed near their habitation.

10. VERMIN WHICH INFEST PLANTS.

a. Take of black soap $2\frac{1}{2}$ lbs. flour of sulphur $2\frac{1}{2}$ lbs. mushrooms of any kind 2 lb. water 60 pints; divide the water into two equal parts, and put one half in a barrel with the soap and the mushrooms, after having bruised them a little—The other half of the water is to be boiled in a cauldron, with the sulphur inclosed in a bag, and fixed to the bottom of the cauldron by a stone or other weight. The bag of sulphur must be stirred about with a stick, the better to impregnate the water. By augmenting the quantity of ingredients the effect will be more sensible. The water that has been thus boiled, must be poured into the barrel, and daily stirred with a stick, until it acquires the highest degree

of rankness; care being taken to stop up the barrel after the water has been stirred. This composition is to be sprinkled, or injected on the plants infested; and it will, *at the first injection*, destroy the greater number of the insects; but it will require frequent *repetitions to kill* those who live *under ground*; especially the *ants*,* to exterminate them, from two to eight pints of the liquor will be necessary, according to the extent of their nests—two ounces of *nux vomica*, added to the above composition, and boiled together with the flour of sulphur, will render the *recipe* still more effectual; especially when ants are to be destroyed.

b. *Blite insects* (*Aphis*); may be destroyed by the smoke of tobacco, or by sprinkling with Scotch snuff.

Dr. Darwin, in his work named *Phytologia*, thinks, that the most effectual means of counteracting the blite insects, would be the *propagation of the larva* of the *Aphidivorus* fly.

c. A kind of bellows has been invented by Mr. Green, of her Majesty's Flower Garden at Kew, to destroy the *Red Spider*, and other noxious *insects in Hot-houses* and *Pinerys*, with the fumes of burning tobacco. These insects have also been destroyed by burning, at the time of shutting up the hot-house, matches, moistened with a tincture of *Assafoetida* in Spirit of Wine, and rolled in a powder of equal parts of brimstone and Scotch snuff; washing the hot-house, frames, &c. with four ounces of Sublimate dissolved in two gallons of water; this must be done with great *care and caution*, in consideration of the nature and properties of the White Sublimate.

10. To protect ripe wall fruit; place phials of sweetened liquor, to decoy and drown *wasps and flies*. Grapes are often covered with bags made of paper or gauze to protect them.

11. *Snails* (*Helix*); may be kept off trees by binding round the trunks two or three rounds of a horse hair

* "*Ants* are common enemies in the corn-fields of *America*. They reside about the roots of plants; and wound and suck the crown of the root of *Indian corn*, as of the *sugar-canes* in the *West Indies*. Raking up and burning *stubble* of the small corn is a very advantageous practice, for destroying these and other insects and vermin."

rope; in espaliers it is necessary to bind also the stakes; and in wall trees it must not only be wound round the trunks, but also be nailed on the wall in a circle beyond the ends of the boughs.

Snails require not only to be guarded against, but destroyed; as they increase greatly, being hermaphrodites, and lay each from 60 to 110 eggs; which they bury in June about an inch deep in loose mould.

12. *Slugs*, (*Limax*); plants are usually protected from these by strewing slacked lime, foot, or saw-dust, on and around them; as ducks feed upon them, the turning a few into kitchen gardens would be perhaps the best way of preventing their depredations.
13. *Worms* (*Lumbricus terrestris*). Gardeners soak the bruised leaves or husks of the Walnut tree, in warm water, and when cold pour the water on grass plats and gravel walks, to kill them; they greatly disfigure gravel walks, by drawing dead leaves into their holes, they also draw small transplanted plants out of the ground, and are full as injurious to gardens as the slug.
14. To preserve young plantations of trees from being injured by Hares, Rabbits, or Rats—take any quantity of tar and six or seven times as much grease, stirring and mixing them well together; with this composition brush the stems of young trees, as high as hares, &c. can reach, and it will effectually prevent their being barked.

VETCH OR TARE.

1. Vetch. (*Vicia Sativa*.)
 - a. *Summer Vetch*.
 - b. *Winter Vetch*.
- c. Rath-ripe Vetch, or Pebble Vetch. Not much cultivated, being tenderer than the common Tare, and does not produce near so much fodder. The seed is sown in the spring.
2. *Wood Vetch*. (*Vicia Sylvatica*.)
3. *Tufted Vetch*. (*Vicia Cracca*.) This and the preceding species said to advance starven or weak cattle above any thing yet known.

The *Tufted Vetch* has been cultivated on a small scale, both by dividing of the root, and sowing of the seeds the end of March, and the increase was great both ways: This plant is perennial, flowers the second year, and grows above two feet high.

4. *Bush Vetch*. (*Vicia Sepium*.) This is supposed to rival Lucern; has been cut four times between the 16th of March and the 30th of September. The seeds are difficult to procure in a large quantity, as the pods do not ripen together, and when ripe, burst and scatter the seed around. As it is perennial, might it not be increased by dividing the root?

5. *Chinese Vetch*. Produces four crops in a year of excellent food for cattle; they grow erect in tufts from 18 inches to 2 feet high. Cultivated in Glamorganshire.

Culture, &c. of the Summer Vetch.

1. SEED.

- a. Eight or ten pecks of seed per acre.
- b. Sown about Lady-day.
- c. Sown where the clover has died off in the spring.
- d. Sown in Scotland with peas and beans.
- e. Sown with a little Wheat, black Oats, or Beans, which nourishes, protects, and draws up the Tarscs—May be advantageously mixed with Oats or Barley.
- f. The drill requires only about half the quantity sown broad-cast, and the crop is superior.

Rooks and Pigeons are well known to be dreadful enemies to this crop, a circumstance which forms a strong objection to the broad-cast culture, in which the seed is insufficiently covered.

2. PLANT.

- a. Cut when the kids begin to fill, then saved, and stacked as hay, and makes a hearty food for cattle; particularly for horses.
- b. This comes into use a fortnight later than the Winter V.

3. USE.

- a. For feeding weaning lambs and sheep.
- b. For soiling horses and cows.

Supplies (for this purpose) *the want between the first and second cutting of red clover.*

c. The seeds are excellent food for pigeons.

d. Bees collect much honey from this plant; not from the flower, but a small leaf, with a black spot on it, from which oozes a nectarious juice.

Culture, &c. of the Winte. Vetch.

1. SEED.

a. Sown from the middle of August to the middle of October; earliest on poor land, or exposed situations.

b. May be sown in spring for foil; but neither this nor the Summer-tare. will ripen their seed, if sown out of their season.

c. A little rye sown with it, nourishes, protects, and draws up the Tares.

2. PLANT.

a. Covered with loose strawey dung to preserve it from the frost.

b. A few oats or beans mixed with them to keep them up; black oats reckoned best, as being less liable to be cut off by frosts than white.

3. USE.

a. The same as the summer vetch.

In Gloucestershire they sow it as *pasturage for horses*, and eat it off early enough to allow of turneps being sown the same year.

b. As *manure*, ploughed into the land in May; answers well on chalk land for wheat in the succeeding autumn.

When Vetches were first introduced into this country from Flanders, they were cultivated for the seed, which were given to horses in the manner of beans; but no use was then made of the plant.

"This is a plant very desirable, to be introduced into the husbandry of *America*."

VINE. (*Vitis Vinifera*.)

Hardy Vines.

1. Ripening in August—Black July Grape. Black Sweet Water. White ditto. Black Corinth, or Currant.

2. Ripening in September—Early White Muscadine. White Muscadine Royal, or Chasselas Blanc. White le Cour Grape, or Musk Chasselas. Red Chasselas.

Black Burgundy. Black Frontiniac. Black cluster, having hoary, whitish leaves, and short compact clusters.

3. Ripening in October—Red Hamburg. Black do. The grapes of both large.

Tender Vines; seldom ripening unless the autumn proves very warm and mild; and are therefore often planted against hot-walls, hot-houses, and forcing-frames.

1. Ripening in September—Red Frontiniac. Grizzly ditto. White ditto. White Muscat of Alexandria. Red ditto.

2. Ripening in October—St. Peter's. *Tokay*. White Syrian (exceeding large clusters). Red Raisin. White ditto. Claret.

"*Tokay* Grapes are flourishing in Maryland, from vines imported by Mr. Barrister C. Carrol. The fruit is excellent, the vines very flourishing and hardy.

The hot-house ripens some of the early sorts in May and June; others in July and August.

Culture, &c.

1. SOIL.

- a. A light dry warm soil.
- b. If a strong moist clay; must be improved with light dry materials, as sea-sand, road-stuff, lime-rubbish, coal-ashes, &c.
- c. In France and Spain they manure the ground about the roots, with cow-dung.

2. INCREASED.

- a. By seed, which readily grows in hot-houses.
- b. By layers: The greater part is to be buried 5 or 6 inches deep, pegged firmly down, and covered with earth; the top to be shortened to three or four eyes.
- c. By cuttings: The middle and lower part of young shoots, of the former summer, are the only proper parts for cuttings; which are to be planted in autumn, or early in the spring.

3. TREE.

2. Planted from November to March in open weather; and the heads of young trees to be pruned to about three eyes; of old trees, to three, four, or five.

- b.* A south aspect the best; but in default of sufficient scope, may be trained on an east or west.
- c.* Bears fruit on young shoots of the same year, which arise from the former year's wood.

d. Pruning.

(1.) In summer commencing in May or as soon as the fruit buds appear, rub off weak, straggling, and evidently unfruitful shoots of the year; and train the rest at full length.

(2.) In July the fruit-shoots may be topped, to throw a greater supply of nutriment to the fruit.

(3.) In winter shorten to a few eyes.

(4.) Have been pruned, and the leaves pulled off in September; thus treated, they have borne the year following a greater plenty of grapes than others, that were not so managed.

It has lately been recommended to train the branches in a serpentine manner.

- e.* It is said that when grapes have acquired their expected size, if the stalks of each bunch be cut half through, they will the sooner ripen—Sun. raisins are grapes thus treated abroad, and left on the tree till dry.

4. USE.

- a.* The fruit both for the table and making of wine.
- b.* In Italy an useful oil is drawn from the grape stones—In order to separate the seeds from the husks and refuse matter, the *mare* is put into a bucket with some water, and worked about with hands, till the seeds, from their superior weight, have all fallen to the bottom of the vessel. They are then to be removed and dried in the sun, or by any other way, as soon as possible: When a sufficient quantity is collected, the whole is to be ground in the same kind of mill that is used for hemp and coleseed; being then *cold drawn*, a fine oil is procured, which is scarcely distinguishable from common olive oil. The refuse matter being scalded in a little hot water, yields a fresh portion of oil, though of an inferior quality, which burns excellently well in a lamp, giving out no unpleasant odour, and less smoke than either rape or coleseed oil. It is also used in the *Parmesan*, for preparing the best kind of calf-skin leather.

ENGLISH VINE-YARDS.

1. In 1718 there was one near Dorking, in Surry, of many acres, which faced the S. and S. W. Planted by the Honourable *Charles Howard*, of *Norfolk*.
2. About the year 1720, a Mr. *Warner*, had a successful one of the *Burgundy* grape, at *Rotherithe*, near *London*.

3. Vine-yards flourished near *Bath* in 1742.

There was also in another part of the county of *Somersetshire*, a vine-yard, that produced annually some hogheads of a good bottled and palatable wine.

4. At Mr. *Hamilton's*, *Pain's-Hill*, *Surry*.

5. At Sir *Richard Worsley's* in the *Isle of Wight*, is at present, a vine-yard of *White Muscadine* and *Plant Verd* vines, which are planted in beds 12 feet wide, with foot paths between; the plants $1\frac{1}{2}$ foot asunder; the stems 8 inches high; at first only two shoots are suffered to remain on the stem, and those cut off the ensuing March; and their place supplied by other young ones; the shoots are not suffered to run into luxuriance, but kept at the length of 2 feet, or $2\frac{1}{2}$.

Under this head may be inserted the successful management of a Vine by *James Gesop*, gardener to *John James, Esq.* of *Hammer-smith*; who having in the year 1778 made a quantity of exceeding good wine from English grapes, was induced to attend very particularly to the cultivation of the vine: His method was as follows; the vine, when it first came under his care, was aged, but had been injured more by neglect and injudicious management than by years; he cut almost the half of the whole stem quite away, and laid down half of the remainder of the wood, and the abundant crop of improved fruit which succeeded, greatly repaid his care; the vine, by continual cutting, consisted, in the ensuing year, of almost entirely new wood. In the year 1779 he cut down all the old wood which was left, and laid the finest wires he could select perpendicularly, about 18 inches asunder; some of them 3, and others 6 feet long; by this means he covered the wall with plenty of well-ripened wood. In the year 1780, according to custom, he cut off all the

old wood, and laid the young wires perpendicularly in the ground, 6 or 7 feet in length, and at the distance of 18 inches from each other: Of the *full crop of excellent grapes* which this culture produced, he *made wine in the proportion of 100 gallons to 100 yards of wall.*

UNDERWOODS OR COPPICES.

1. The heads of the stools should be but little, if any, above the surface of the ground.
2. Should be cut as close and smooth to the stool as possible, and before the sap is in motion.
3. The fallen stuff should be cleared away, before the young shoots begin to spring.
4. Particular attention should be given to the fences, to prevent cattle committing irreparable injury.
5. Hop-binds laid among the stools has proved of the greatest service, by suppressing of weeds and grass, which would otherwise have exhausted the soil.
6. All trees growing among underwood should, if designed to be fallen, be cut with it.
7. Unthrifty and stunted trees should be removed, and all healthy young trees and saplings preserved for a succession.
8. Trees are detrimental to underwood, as their shade and roots prevent its increase.

WALNUT. (*Juglans Regia.*)

Varies. Early oval, common oval, round, large, largest, French, large double, late-ripe, tender-shelled, hard-shelled; The tree that bears the hard-shelled nut, is the darkest coloured, and hardiest timber.

Culture, &c.

1. SOIL.

- a. Will succeed in either low or high situations, and almost any soil; but is most prosperous in loamy ground.

2. INCREASED.

- a. By nuts preserved till the February following in dry sand; then planted in lightish ground, in drills 3 inches deep, and a foot asunder.

3. TREE.

- a. At two years old to be transplanted into the nursery, and the tap root shortened.
- b. Begins to bear at seven or eight years old, but not considerable, till they attain a large growth.
- c. Grows 40 or 50 feet high.
- d. The wood is durable, and not attacked by the worm.
- e. Nothing will grow under its shade; but as it does not leaf till about the 21st of April, gardeners raise early crops under the branches, as coleworts, spinage, &c. and plant gooseberry trees, whose fruit is gathered green.

4. USE.

- a. The timber proves valuable for many purposes in the cabinet, and joinery branches.
- b. A wine is made from the tree, by boring the trunk; or which is less injurious, and produces more liquor, by cutting off the end of some superfluous branch, of such a size as may fit the mouth of a bottle to receive the sap.
- c. The fruit.

(1.) When about half or three parts grown, is excellent for pickling.

(2.) When ripe for the table should be gathered in heaps to ferment and sweat a few days; when the green covers will separate from the nuts, must be kept in a dry room, or in boxes or tubs of sand, for use.

If the driest nuts are slightly cracked, and soaked for twelve hours in cold water, the kernels will peel as easily as fresh ones.

(3.) An oil is drawn from the kernel, which is used by painters, for whites and other delicate colours; and also for gold-size and varnish; it likewise stains wood a dark colour: The lees fatten hogs.

The sooner the oil is drawn the greater quantity, but the drier the nut the better.

(4.) The green husks boiled dye a yellow without any mixture.

- d. Fishermen use water in which the bruised leaves have been soaked, to drive worms out of their holes; to

which gardeners add the husks, and pour the water on grass plats to kill them.

WARPING

Is a process used in Lincolnshire, and some other places, for raising the surface of low and marshy lands, by *repeatedly flooding* them, and allowing a succession of sediment to be deposited.

1. Is effected by a cut or canal from the river, having a sluice for the admission and discharge of the water, which is also confined to the grounds intended to be warped, by surrounding banks raised to the required height; which may be from 4 to 7 feet.
2. A sluice for warping, 5 feet high and 7 wide, will do for 50 acres per annum; if the land lies near the river, for 70.

With but one sluice, every other tide only can be used; as the water must run perfectly off that the surface may incrust; and if the canal be not perfectly empty the tide has no effect.

3. One tide will leave, on an average, one-eighth of an inch; and in four years, land has been warped to the depth of $3\frac{1}{2}$ feet. The farther the course of water, the smaller the sediment.
4. Its effect is very lasting upon land, which requires no farther manure for many years; and produces vast crops.
 - a. A wheat stubble warped, and sown with oats the following April, produced twelve quarters per acre.
 - b. Wheat afterwards 36 bushels.
 - c. Oats scuffled upon the fresh warp, the scuffle being drawn by eight, and held by one man, produced on 3 acres particularly; fourteen quarters, one sack, per acre.
 - d. Beans 90 bushels per acre; one acre measured to decide a wager, yielded 99 bushels—And 144 pods have been taken from one bean, on four stalks.
 - e. Tartarian Oats have grown 7 feet high.
 - f. White clover and hay-seeds, mown twice the first year; the first cutting three tons per acre, the second one ton, afterwards an immense *after-math*.

5. The expense of warping has been 12l. per acre; but poor land has been so raised in value, as to let from 50s. to 5l. per acre.
6. The sediment from tide water is sea-sand and slime; from river water, mud.

WATERCRESS. (*Sisymbrium Nasturtium.*)

Culture, &c.

1. PLANT.

- a. To cultivate this in gardens requires a running stream with a muddy bottom; if the land has much slope, the water must be dammed up in small ponds of the depth of about a foot; the plants are to be set in the spring, and not cut the first season, but suffered to run to seed.
- b. Grows naturally in springs, brooks, and rivulets.

2. USE.

- a. This is very universally used as an early and wholesome spring salad.
- b. Used medicinally.

WEEDS.

1. INJURIOUS TO ARABLE LAND.

- a. *Couch* is the proper name of the *Triticum Repens*, but is frequently applied to other grasses which have a perennial creeping root; as the Bent grasses, (*Agrostis*'s); creeping soft Grass, (*Holcus Mollis*); Tall Oat grass, (*Avena Elatior*); and some others.

They are destroyed by repeated summer ploughings, or by forking them out and burning them.

Among Sharp's plates, containing figures of new invented implements of husbandry, is a jointed horse rake for pulling up Couch-grass.

- b. Coltsfoot. (*Tussilago Farfara.*) The way to destroy this weed is by cutting it up in those months when it begins to throw its flower, *i. e.* February or March; at which time it will bleed to death.
- c. *Charlock* is the *Raphanus Raphanistrum*; but the following plants, equally noxious to the farmer, pass under its name—viz. Wild Mustard, (*Sinapis Nigra*);

Wild Rape, (*Brassica Napus*). These plants are annuals; their seeds will lie in a clod as safe as in a granary, and vegetate at the end of 20 years, when ploughed up and exposed to moisture.

They are to be extirpated by ploughing them under when the field is fallow, or by weeding them out of the crop before their seed shall have been ripened. The same method must be pursued with other weeds. See *Cultivator*.

d. *Melilot*, (*Trifolium Melilot Officinalis*); *White Darnel*, (*Lolium Temulentum*); and *Garlic*, (*Allium Oleraceum*); require particular care to destroy, as they not only injure a wheat crop when growing, but lessen its value at market, by communicating a most loathsome flavour to wheat and other grain, so as to render it unfit for making bread. *Stinking Chamomile*, (*Anthemis Cotula*), where it abounds, is often found to blister the hands of weeders and reapers.

e. *Corn Marigold*. (*Chrysanthemum Segetum*.) This noxious weed is said to be destroyed by dunging the soil where it grows in autumn; letting it lie fallow one summer; and harrowing the ground in about five days after sowing the seed for the future crop—Also by manuring with chalk.

f. *Thistles*, cut an inch above the ground will not be so formidable at harvest, as those cut at the same time with the hoe, and below the surface. In the former case, the remaining stub of the thistle gets filled with water, which resting upon the crown of the plant, injures it so far as to occasion a few feeble shoots only to rise; whilst in the latter, strong and luxuriant stools shoot forth.

(1.) If *Thistles*, *Briers*, &c. are cut with a mattock in August, they will bleed to death.

(2.) Peat-dust scattered upon thistles causes them to wither, as if scorched; but they generally recover unless the dust be repeated.

g. *Berberry*. (*Berberis Vulgaris*.) This shrub is said to have the quality of blighting the ears of wheat even to the distance of 300 or 400 yards across one or more fields.

b. A weed, supposed to be either the *Brassica Muralis* of Hudson, or a variety of it, begins to infest the island of Thanet, and is not a little alarming to the farmers, as it is of the most prolific kind, and very difficult to eradicate. It was introduced a few years ago among some oats, which were imported in a vessel that was wrecked upon the coast of the island, and were washed by the tides along the shore among the sea weeds, and with that carried to different farms. It flowers and seeds in autumn. The inhabitants call it the *Stink-weed*, from its fetid smell.

i. *Dodder* or *Hellweed* (*Cuscuta Europæa*.) This is a very singular plant; as soon as it creeps up another it quits its root, and is fed by the plant on which it fastens, and its branches will thus run from one to another a furlong or more. Hops, Flax, and Beans, are mostly attacked by it. The last is best freed from it by turning in sheep, which both break its branches and feed upon it.

Many weeds are generally introduced into fields by that slovenly practice of suffering them to grow and seed on the dung-heaps:

☞ “ One year’s good weeding,
Will prevent seeding;
But one year’s seeding,
Makes seven year’s weeding.”

2. INJURIOUS TO CATTLE IN PASTURE LANDS.

a. *Water Hemlock*, (*Phellandrium Aquaticum*) is generally esteemed a fatal poison to horse, occasioning them to become paralytic; but this effect is owing to an insect, (*Curculio Paraplecticus*), which generally inhabits within the stem. The usual antidote is pig’s dung: To oxen this plant is both wholesome and agreeable. Horses are said to have been killed by eating the Common Wormwood. (*Artemisia Absinthium*.)

b. *Water Cowbane*. (*Cicuta Vireosa*.) Early in the spring when it grows in the water, Cows often eat of it, and are killed by it; but as the summer advances, and its smell becomes stronger, they carefully avoid it.

Cattle reared in Herefordshire avoid Meadow Saffron, (*Colchicum Autumnale*), which grows there in plenty; but cattle brought from other parts eat of it, and are poisoned.

- c. *Water Germander*, (*Teucrium Scordium*); *Blue Sowthistle*, (*Sonchus Alpinus*); *Ramsons*, (*Allium Urfinum*); *Treacle Mustard*, (*Thlaspi Arvenfis*); and *Common Wormwood*, (*Artemisia Absinthium*); gives a disagreeable odour to the milk of Cows that feed on them; and *Corn Mint*, (*Mentha Arvenensis*), prevents its coagulation.
- d. *Wild Angelica*, (*Angelica Sylvestris*), renders hay ungrateful to cattle: and *Wall Barley Grass*, (*Hordium Marinum*), when mixed in hay, proves highly injurious to horses, the awns or beards of the ears sticking into their mouths, and making them so sore that they are unable to eat.
- e. *Yew*. (*Taxus Baccata*.) The loppings, in a half dried state, have frequently been fatal to cattle; and the bark to sheep. *Marth Marigold*, (*Caltha Palustris*), occasions such an inflammation to cows that eat of it, that they generally die: *Shaving Horsetail*, (*Equisetum Hyemale*), is reckoned hurtful to cattle; some entertain an opinion, that if cows chance to feed upon it their teeth will drop out.
- f. *Common Lousewort*. (*Pedicularis Sylvatica*.) If the healthiest flock of sheep are fed with it, they become scabby and scurfy in a short time; the wool gets loose, and they will be over-run with vermin.
- g. *Common Wormwood*, gives a bitter taste to the flesh of sheep that have eaten it; as does *Sun Spurge*, (*Euphorbia Helioscopia*.) One sort of *Poppy*, (*Papaver*), and *Mouse-ear Scorpion Grass*, (*Myosotis Scopioides*), generally proves fatal to sheep: *Dog's Mercury* (*Mercurialis Perennis*), is said to be hurtful to them; and *Wood Anemone* (*Anemone Nemorosa*), brings on a bloody flux to such as are unaccustomed to eat it. In some part of Cambridgeshire sheep are subject to a relaxation of the shoulder; this is imputed to their eating an herb or grass called *Cockspire* (*Cocksfoot*);

a cure is effected by removing to high land on the first appearance of the disease.

b. Shepherds impute the rot in sheep feeding on the Round-leaved *Sundew*, (*Drosera Rotundifolia*); *Marsh Pennywort*, (*Hydrocotyle Vulgaris*); and *Common Butterwort*, (*Pinguicula Vulgaris*); all of which grow in marshy ground's. But from an experiment made on purpose with the last, it appeared that they do not eat it. It may be made a question, whether the rot in sheep is so much owing to the vegetables in marshy grounds, as to a flat insect, called a Fluke, (*Fasciola Hepatica*), which is found in these wet situations adhering to the plants, and likewise in the livers and biliary ducts of sheep, that are effected with the rot.

i. *Low Boletus* (*Boletus Bovinus*.) In cows and other cattle that have eat of it, it has been known to create bloody urine, nauseous milk, swellings of the *abdomen*, inflammations in the bowels, stoppages, diarrhœas, and death. In sheep they bring on a scirrhus liver, a cough, a general wasting, and drop y.

k. For Mallows, Docks, and some other deep-rooted plants, which, though perhaps not noxious to cattle, are seldom or never eaten, and take up the room of useful plants; the Docking iron should be made use of to eradicate them; of which see the plate, fig. 14.

WELD. (*Reseda Luteola*.)

Culture, &c.

1. SOIL.

a. A stiff long loam, moderately moist, but not wet.

b. A sandy soil.

c. Unless the land is very poor it does not require dung.

A rich soil said to make the stalk hollow and not so good.

2. SEED.

a. Sown with barley and clover, half a peck to the acre—Is pulled up from amongst the clover the next year.

- b. Sown alone in August, one gallon to an acre.
 - c. Sown with a small portion of turnep and rape, which are eat off by sheep in winter or early in April, and the weld let stand for a crop.
- (1.) Four quarts of weld-feed, with two quarts of Rape-feed, and one quart of Turnep-feed.

3. PLANT.

- a. When raised alone to be hoed to the distance of 6 inches about two months after they are come up, and on the whole treated like turneps.
- b. Transplanted from seed beds at Midsummer, stand all winter, and ripen the summer following.
- c. When in full bloom, are either drawn or cut, dried and laid up for use.

As leaving the plants to ripen their seed injures their dying quality, a piece of ground should be purposely allotted to plants intended for seed.

4. USE.

- a. Dyes a beautiful yellow.
- b. Blue cloths, dipped in a decoction of it, become green.
- c. The yellow colour of paint, called Dutch Pink, is got from this plant.

The tinging quality resides in the stems and roots. Dried in proper houses in Scotland the colour was found equal to the foreign.

WHEAT.

- 1. Without beards.
- a. *Winter Wheat*, (*Triticum Hybernum*); should not be sown before September, nor later than November.
- b. *Spring or Summer Wheat*, (*Triticum Aestivum*); sown from the middle of April to the 11th of May.

1. Sown with seed.

These produce finer flour than the bearded wheats.

2. With beards.

- a. Grey, Duckbill, Grey Pollard, or Fullers Wheat, (*Triticum Turgidum*); apt to lodge if sown thick—The grain said to produce more flour in proportion than any other sort of wheat.
- b. Cone Wheat. (*Triticum Quadratum Miller*). This is suited to strong wet lands.

- c. *Polonian Wheat*, (*Triticum Polonicum*) Apt to lodge if sown thick; produces much flour.

Of the above there are several varieties known to our farmers, but which differ in little besides the colour of the chaff and form of the ears.

In old books bearded wheat is called French Wheat, and without beards, Not-Wheat.

3. *Foreign*. These appear as yet to have had only a partial trial towards determining their value.

- a. *Siberian Spring-wheat*, ripens full as early as the common Spring-wheat—the increase twenty-five for one on the seed sown; gives only half the flour of the winter wheat.

- b. *Switzerland Spring-wheat*, ripens a fortnight sooner than the common Spring-wheat, and as early as any of the autumnal sorts

- c. *Ægyptian bearded Wheat*; six grains sown produced 102 stems, with large branching ears, and the ears contained, upon an average 102 grains or better; so that the produce of the six grains, at the medium of 120 grains to each ear, make 12,240, or 2040 from each grain.

- d. *Murwaany Wheat*, which Dr. Shaw brought from Barbary, and planted in the Physic garden at Oxford, threw out each 50 stalks—It likewise happens that one of these stalks will sometimes bear *two ears*; whilst each of these ears will as often shoot out into a number of *lesser ones*.*

- e. A species of Spring Wheat supposed to be the German *Spelter*, was cultivated for three years near Edinburgh; it was sown so late as the 10th of April, and was always amongst the first grain harvested. It seemed to be well adapted to those places, where the severity of the winter storms, and other circumstances, prevent the cultivation of wheat sown in autumn. The produce the first year was seven bolls an acre, and the next year eight bolls, on land not dugged; and being a very weighty grain, it yielded a great deal of flour. But in 1799 it failed altogether; so that it would seem to be unable to withstand a severe season.

* "Such is the unimportant *Smyrna Wheat*, often tried here, to very little satisfaction."

f. Zealand Wheat; a white and full bodied grain, chaff white, without awns; ears somewhat large; straw long and reedy. This sort is well adapted to weak and middling land: in a rich soil, especially in a moist season, it runs too much to straw.

g. In the island of Jersey, they cultivate a small spring wheat, called *Froment Tremais*; because it is only three months in the earth.

Culture, &c.

I. SOIL.

a. White wheats suit best light soils; and brown, strong.

(1) White wheats are more apt to sprout in the ear from wet seasons, than the brown or red.

(2) White wheats when sown repeatedly on strong land become gradually browner.

b. In Norfolk light sandy soils are held together by ray-grass, white clover, trefoil, and other useful plants; and the wheat dibbled on the lays; the sward or flag being first turned over flat, and rolled.

c. Wheat has been sown and harrowed in after turneps without ploughing—The crop fine and free from smut.

d. Thick set woolly-eared wheat, owing to its retaining much moisture, is better suited to a dry soil, and a dry climate; than the thin set eared, with smooth chaff.

2. INCREASED FROM SEED.

a. Sown *broad-cast*; this method is suited to strong lands, the quantity three bushels per acre.

The broad-cast is unfavourable to the hoe.

b. Set,—said to have the advantage over the broad-cast, by a saving at least of six peck per acre of wheat; giving cleaner and better corn, and also providing a very lucrative employment for the poor; a single family having received two guineas a week, for six weeks.

c. Drilled—Saves half the seed that is usually sown broad-cast, produces a better crop, destroys more weeds, harvest at less expense, and leaves the soil better for future crops. Sows the seed at less than half the expense attending setting.

3. INCREASED BY DIVIDING THE ROOT.

a. The following successful attempt was made by Mr. Miller to save seed corn by dividing the root.

A single plant, taken up the 8th of August, was divided into 18 parts, and each part planted; between the middle of September and October they were again divided into 67 plants; and again the roots were divided between the middle of March and 12th of April, and produced 500 plants: by this means one single grain produced in one season

In ears	21,109	
In number	570,000	fold!
In measure	$3\frac{3}{4}$	pecks
In weight	47	pounds.

4. PLANT.

- a. Thirty stems have grown from a single root, with ears containing from 90 to 100 grains. In another instance 20 stems, proceeding from one root, produced ears containing 968 grains.
- b. The Society for the Encouragement of Arts, &c. gave the silver medal for the following method of harvesting corn in wet weather: Mr. Palmer, to whom it was adjudged, collected as many men as were necessary for the purpose, and caused a part of them to cut the corn in the common method with sickles, and bind it into sheaves; he employed others to house and thresh it. The next morning it was winnowed, and dried in a malt-kiln. A timber stove or a hop kiln will answer the same purpose, and the *extra-expense* of this method of harvesting is estimated at 9s. an acre, viz. 5s. per acre for drying and 4s. for the *extra trouble* of threshing it.
- c. In Cornwall and in Somersetshire it is the practice in rainy weather, to build the sheaves of wheat, barley, and other grain in the field, into a regular solid cone, about 12 feet high; the beards all turned inwards, and the but-end only exposed to the weather. The whole is finished by an inverted sheaf of reed or corn, tied to the upper rows.
- d. It is not uncommon in Wiltshire to cut the wheat before it is quite ripe, especially if there is any appearance of blight upon the straw. In that case they lay it down in gripe (as they call it), with the ears hanging into the furrow, so as to receive as much of the

dews as possible, and turn it for two or three days together before they bind it into sheaf. This is found to improve the grain in quality, as well as to increase the quantity.

5. DISTEMPERS, CAUSE OF, AND CURE.

- a.* Black-Rust, is cured by letting the wheat stand uncut, three weeks or more after the usual time at which people in general cut such wheat; by which time the sun and air will destroy the insects that occasioned it; the knots will then open, and the sap passing up will recover the grain.
- b.* Smut, in wheat may be removed by sinking a vessel that contains the seed beneath the running stream, or under a pump; stirring it briskly with a broom, whereby the balls, if any, of this pernicious substance will float away, or may be skimmed off; and if there be not any of them, but some of the powder adhering to the seed-wheat, this active stirring, or brushing, will cleanse it from every particle of this infecting matter. The seed will then be in proper condition for sowing.

If intended for flour after being thus cleansed, it must be dried in a malt-kiln, heated so as not to exceed the 85th degree on Farenheit's thermometer; and it will dry in about 18 hours.

- c.* Mildew, this and the rust, is said to be occasioned by fungi; and the smut, a decay of the seed in consequence of its want of impregnation by the male farina.

6. PRESERVATION OF SEED AND PLANT.

- a.* In granaries corn is subject to be destroyed by the Weevil, Moth and Beetle, *i. e.* the larva of a Moth (*Phalœna Evonymella*), and of a Beetle (*Curculio Frumentarius*): Frequent screening, stirring, and exposure to draught of wind or fresh air will prevent these insects injuring it, and destroy their eggs if laid among it—Should this have been neglected, and the insects appear in the winged state,—

(1.) A hen or hens with new hatched chickens, will free it entirely of the insects, without feeding (or very sparingly) on the corn.

(2.) It is said that the leaves of Pellitory of the Wall

will destroy the Weevil in corn, and that the smell of lobsters also proves fatal to them.

(3.) When the larva forsake their food and ascend the walls, and also the moth, they may be exterminated by closing up all the doors and windows of the corn-chamber, and filling it with the fumes of *Brimstone*, by leaving it burning on a pan of charcoal, without giving it any vent for 24 hours. Great caution however, must be used, to open the windows and doors, and let all the fumes be entirely gone before any body enters the place, for fear of suffocation. The fumes of *Sulphur* are in no wise hurtful to the corn.

(4.) See Poplar.

b. On ship-board.—A cheap and efficacious ventilator for preserving corn on ship-board from heating has been invented by Mr. South; the supposed expenses from 6 to 20 guineas, according to the size of the ship, which is under 4d. per quarter on the first cargo; it takes to pieces, and will, if well painted, last many years. A full account of this invention may be seen in the VIIIth Vol. of the Bath Agricultural Societies' papers. P. 53—68.

c. Wheat, *while growing*, is often destroyed by the red wire worm, (*Julus*), which feeds on the principal or downward root. The remedy is to roll the surface very hard, or to tread it with sheep, either folded or driven on it, between the sowing of the crop and its appearing above ground. A top dressing with foot in the spring is also said to destroy them.

This insect is equally injurious to turneps.

d. In the dry summer of 1800, the larva of an insect, called Long-legged Taylors (*Tipula Oleracea*), did great damage in Scotland to the wheat, and set crops, sown upon a clover lea in the spring of the year, by eating the leaves; these destructive effects were principally upon strong lands, and moist soils; sandy dry soils were perfectly free from them.

e. The spur in the seed proceeds from the impregnation of an insect.

7. USE.

a. The seed for flour and for starch.

b. The straw for thatching, litter, and manure.

WILLOW.

1. Yellow Willow. (*Salix Vatalina*.)
2. Almond-leaved Willow. (*Salix Amygdalina*.)
- a. Small Red Willow, or Binding Rod.
- b. New kind.
3. Osier Willow. (*Salix Viminalis*.)
- a. Yellow Osier.
- b. Brown Osier.
4. Spaniard.
5. Broad-leaved red-hearted Huntingtonshire Willow.
6. Sweet bay-leaved Willow. (*Salix Pentandria*.)
7. Common Sallow. (*Salix Caprea*.)
8. Common White Willow. *Salix Alba*.
9. Purple Willow. *Salix Purpurea*.
10. Dutch Willow.
11. Upland or Red Willow.
12. *Hartlib*, in his *Legacy*, mentions a small Osier or Willow at St. Omar's in Flanders, which grows on islands which float up and down, of which they make curious fine baskets: He advises the introducing it into England; at the same time says, it grew in John Tradescant's garden at South Lambeth, near London.

Culture, &c.

1. SOIL.

- a. The common Sallow grows best upon a dry soil, as does the upland Willow.
- b. A moist soil suits all the above trees, except the Sallow and Upland Willow.

2. INCREASED.

- a. By Cuttings.
- b. By plashing down the shoots of old Willow stocks.

3. TREE.

- a. Willow bed. The ground to be dug a spade deep, and planted in March with sets 15 or 16 inches long, cut diagonally off the strongest shoots of the last year's growth, but not near the top, that being too porous: the rows 2 feet asunder, and the sets 18 inches from each other, leaving about 7 inches above the ground; must be kept well weeded, and the ground not suffered to be long under the tide. The shoots are to be cut

close the first year, the second next cutting season a portion may be left to stand another year, where large stuff is wanted, for the ribs of large baskets, &c.

b. The Dutch Willow must be planted 6 feet from each other—Are cut from 7 to 15 years growth.

c. Upland or Red Willow: The London Society for the Encouragement of Agriculture, &c. require 1200 at least to be planted on an acre.

d. Pollard Willows—For these are planted in March boughs of the common white Willow, about 10 inches in circumference, and 9 feet long, trimmed of the lesser branches, and a short fork, left at the top—they are planted 8 or 9 feet apart near the sides of rivers, and wet ditches.

4. USE.

a. Yellow Willow. Being of a tough, but yielding nature, it is used by nursery-men for binding packages of trees and shrubs, and for tying up the branches of wall and espalier trees; it is also used by crate and basket-makers.

b. Almond leaved Willow—The variety *a.* is used for binding the produce of garden grounds—var. *b.* is of a large growth, and produces a great crop. It is used both by the basket-makers and the corn-sieve makers; and, indeed, is fit for any work which requires a firm as well as a tough rod.

c. Osier. This is a very pleasant working rod, and produces a great crop; of it is made baskets, hoops, crates, bird-cages, &c. It is often planted to prevent the banks of rivers from being washed away by the force of the current.

Paper has been made from the bark and leaves.

d. Spaniard. Useful in binding brush or underwood.

e. Broad-leaved red-hearted Huntingtonshire Willow. For making hurdles, stakes, gates, and other farming implements. The wood is tough and light, and answers for all the purposes of deal.

This tree grows fast, and to a large size. On the western coast of Scotland, are some 2 feet or more, in diameter.

f Sweet bay-leaved Willow. The down of the seeds, mixed with a third part of cotton, has been proved to be a very good substitute for cotton itself; the leaves dye yellow; and the branches are cut to make springles. The wood may be made into paper.

g. Common Sallow. The bark is used to tan leather; the wood is smooth, soft, white and flexible; it is used to make handles for hatchets, prongs, spades, &c. and furnishes shoemakers with cutting-boards and whetting-boards, to smooth the edge of their knives upon. It also makes an excellent coal for painters' scribers.

It may be topped every second or third year.

b. Common white Willow. The bark will tan leather, and dye yarn of a cinnamon colour; of it is also made a sort of ropes; the wood is used to make poles, stakes, hoops for casks, &c. and for fuel.

i. Purple Willow. The shoots are used to make baskets, cradles, and all sorts of twig-work.

k. Dutch Willow. Are split and made use of for hoops, chairs, posts, gates, rails, &c. for which they are very excellent; some are sent abroad to support vines.

l. Willows make (with oak posts) very durable gates; which have the advantage of lightness, and not damaging themselves by shutting to—The wood also resists water, and remains sound many years after most other woods are totally decayed.

m. For hedges, being planted cross or lattice wise, and bound along the top.

n. In Sweden and in Germany sheep are fed partly during the winter with the leaves of trees, of which the best are those of the Willow, Osier, and Sallow; and also of the Maple, Birch, Beech, and Quickset; if given in too great quantities they heat them. Sheep will also eagerly eat the leaves of the trembling Poplar, which are supposed to be hurtful.

WINE (see page 39.)

WOAD. (*Isatis Tinctoria*.)*Culture, &c.*

1. SOIL.

a. Delights most in a deep fat loam, with as much sand as to admit of easy pulverization.

Exhausts the land exceedingly, and more than two crops must not in general be taken.

b. The land to be ploughed—1. against winter—2. in the spring, when the ridges should be formed—3. in June, and the last in July, or very early in August. In the intervals of the ploughing, harrowing should take place, to destroy all weeds.

2. SEED.

a. Sown early in August—Answers better drilled than broad-cast.

3. PLANT.

a. To be hoed when two or three weeks old to at least the distance of 6 inches; some thin and weed them by hand.

b. Three or four crops or gatherings will be produced in succession; but the first two are the best. The time of gathering is determined by the full growth of the leaves, and the first appearance of change of colour at the extremities. The leaves are cut by hand, and gathered into baskets by women and children.

c. Is cured by throwing it into a mill constructed with a heavy iron ribbed roller, something like that which is used for bruising bark and other substances; by this process it is cut and bruised to a pulp. It is then laid in small heaps, pressed close and smooth; and as the crust formed on the outside cracks, it is closed again to preserve the strength of the substance. After laying about a fortnight in this state, the heaps are broken up; the outside worked into a mass, and the whole formed by the hand, and sometimes by wooden moulds, into oval balls; which are then dried on hurdles under a shed exposed to the sun.

They turn black, or of a dark brown on the outside, when well manufactured; and are valued in proportion to their specific weight, and a purplish cast in the inside.

d. If seed be wanted, after two cuttings, the crop is suffered to go to seed for the next year; but if only one crop is taken the seed will be finer. When the pods turn of a dark colour the seed is ripe; the stalks should then be reaped like wheat, and spread abroad; and if the weather be favourable the seed will be fit for threshing in four or five days.

4. USE.

a. It is much valued by dyers for its blue colour; and it is the basis of many other colours. A French chymist has lately published an opinion, that real indigo may be obtained from Woad, and from the blue scabious; by treating them like the indigo plant in America.

b. Is coveted and fed on by sheep, and said to cure them of the rot.

YAMS. (*Dioscorea Bulbifera* ? *Sativa* ?)

1. Red.

2. White, called *Tannie* in the West Indies (*Arum Esculentum* ?)

3. West India Yam (*Dioscorea Alata*) Will grow in the open ground in England.

Culture, &c. of the red and white yams.

1. SOIL.

a. They grow on poor soil, even more abundantly than rich, (where they are apt to run too much to stem, and to be less productive at the root); and from the constant verdure which they retain to the latest period of the season, they enrich the ground little less than a crop of turneps itself. The Yam is cultivated in most parts of Scotland and in North Wales.

2. PLANT.

a. Are treated in cultivation like potatoes; are excellent preparations for a wheat crop.

b. Are very productive; from 12 to 20 tons an acre is a common return of the red; the white is a finer species, but a less luxuriant crop.

c. The time of planting the end of May or beginning of June; are taken up in October or November, and housed, or laid up in pits like potatoes.

3. USE.

- a.* Chiefly for milch cows, increasing the produce without affecting the quality or taste of the milk. As cattle eat them with the greatest voracity there is a danger attending them, if given in large quantities; hence, cows are never allowed above half a peck at a time; but this quantity may be repeated twice, or thrice a day, if care is taken to allow a considerable interval between each feed. In the West Indies are given to Mules.
- b.* The white yam eats tolerable well at table. In the West Indies it is used to thicken soups.

YARD LAND.

Is a quantity of land, different, in different places; at Wimbleton in Surry, it is 15 acres; in other counties it is 20, in some 24, and in others 30 or 40 acres.—It also signifies the right which a parish or farmer has, to depasture with sheep, cows, or horses, on waste land.

YARROW. (*Archillea Millefolium.*)

Sheep are so particularly fond of this plant, that its cultivation has been recommended; grows very well in a dry sandy soil, and its deep roots enable it, to keep its verdure in very dry seasons.

YEW. (*Taxus Baccata.*)

Culture, &c.

1. SOIL.

- a.* Grows naturally on chalk, and thrives best on hills.
b. Very large trees have grown upon barren cold soils.

2. INCREASED.

- a.* By berries sown as soon as ripe, with the mucilage that surrounds them.

3. TREE.

- a.* Is of no great height, but the trunk grows to a large size—Mr. Pennant (in his Scotch Tour) mentions the remains of one, whose ruins measured $56\frac{1}{2}$ feet in circumference.
b. Bears transplanting even when old.

c. The wood is hard, smooth, and beautifully veined with red.

d. The leaves are fatal to the human species; and the loppings in a half dried state to cattle.

4. USE.

a. Of the wood is made tops for angling rods, bows, axle-trees, spoons, cogs for mills, wheels; and flood-gates for fish-ponds which hardly ever decay.

The wood is sometimes found so hard in bogs in Ireland, as to give fire at the stroke of a hatchet.

b. Is the most proper of all trees for forming hedges for the defiance of exotic plants; even a better protection than walls, as the winds are not reverberated.

ZEUGOMETER.

A small pocket instrument for proving corn, seed, &c.

"From a late English Publication.

"A discovery of considerable importance has been announced, with regard to the preservation of corn. To preserve Rye and secure it from insects and rats, nothing more is necessary than not to fan it after it is threshed, and to stow it in the granaries mixed with the chaff. In this state it has been kept more than three years, without experiencing the smallest alteration, and even without the necessity of being turned to preserve it from humidity and fermentation.—Rats and mice may be prevented from entering the barn, by putting some wild wine or hedge plants upon the heaps; the smell of this wood is so offensive to those animals that they will not approach it. The experiment has not yet been made with wheat and other kinds of grain, but they may probably be preserved in the chaff with equal advantage."

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Pages in which the Figures in the Plate are particularly referred to.

- Fig. 1. A turnep transplanter, page 325.
2. A tippie, p. 81.
3. A draining spade, p. 104.
4. A draining scoop, p. 105.
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6. A hollow brick; two of which form a pipe drain, p. 103.
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